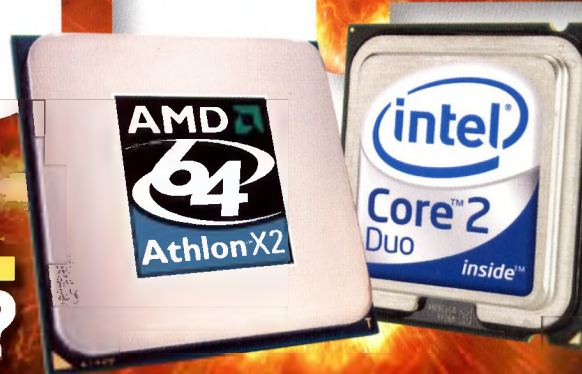


apc

HIGH-PERFORMANCE COMPUTING

MAY 2007



AMD vs INTEL WHO'S REALLY FASTER?

10 dual-core CPUs tested: we explode the value & performance myths

apc FREE SOFTWARE

MAY 2007 / Vol 27 - No 5

SOFTWARE / SECURITY / PLAYABLE DEMOS / LINUX



AMERICA'S ARMY SPECIAL FORCES (COALITION) 2.8

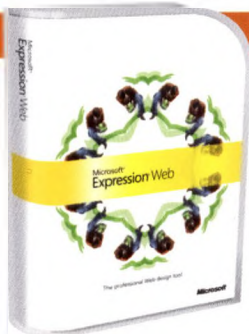
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CREATE YOUR OWN VIDEO GAMES!

Create your own arcade and platform games, adventures and screen savers. Full tutorial in this month's magazine.



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BIG BRANDS: Dell vs Viewsonic vs Acer vs BenQ vs Samsung **AND MORE!**



YOUR VOTES ARE IN!



**AUSTRALIA'S
#1 ISP**

PLUS! The best networking, web hosting, wireless and more in APC's Internet Technology Awards 2007

HACK YOUR HARDWARE

Region-free DVD, router and CPU tweaks, iPod secrets **AND MORE**



VOIP FOR BUSINESS

Where to start and what you need to ensure reliability



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Microsoft

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Microsoft



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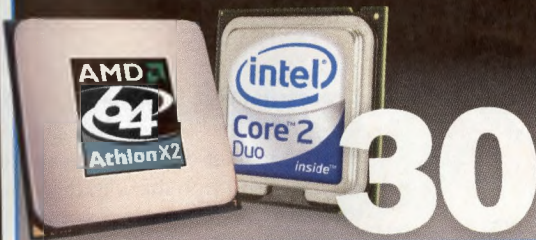
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AMD vs INTEL WHO'S REALLY FASTER?



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19-22 INCH
WIDE-SCREEN
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HANDS-ON WITH HARDWARE AND SOFTWARE

HARDWARE



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This logo indicates a free, complete and unrestricted software package, available only on APC's cover DVD.

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MICROSOFT EXPRESSION WEB

WORLD EXCLUSIVE!

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ZENWALK 4.4

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CREATE YOUR OWN GAMES

Create your own arcade and platform games, adventures and screen savers.



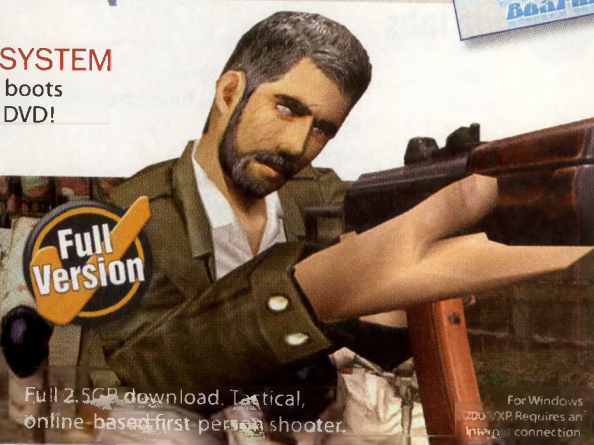
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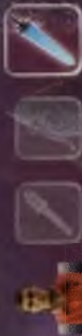
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Microsoft

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MSRM37



TONY SARNO

After a process lasting four months, our readers have chosen the winners of the inaugural APC Internet Technology Awards (page 87). Reader-voting-based awards mean you have to sort through thousands of nominations (including the crazy stuff some people send in), then ensure the voting process prevents attempts at poll manipulation. It's a lot of work, and I've been asked why we didn't just use a judging panel. At times I asked myself that too, but my answer is that it came down to APC's unique readership.

Most of you work in fields related to IT and the internet, so generally have a technical background. But at the same time, you're also roll-up-your-sleeves power users. For a product or technology to make you happy, it needs to satisfy both the exacting standards of the IT expert and the passions of the technology enthusiast. I felt there can be no tougher bunch of critics than APC readers, so Reader Awards it was.

The nominations ran from December to end of February, enough to list a very wide-ranging set of products. Early on, we could see a grass roots trend: web 2.0 products were more popular than we expected. One was Remember the Milk. "Remember the what?" was my first reaction when I saw its nominations. As it turned out, this online task/diary organiser is one of the new web's most popular applications, all done by two

people out of an office in Sydney's Chatswood. Then, we discovered Intranet Dashboard, one of the top collaborative intranet platform companies in the US. It was based in Melbourne! So just at the nominations stage, our readers had succeeded in highlighting the amazing progress of an entire culture of young entrepreneurs having tremendous global success.

When it came to the reader voting, we used the *Dancing with the Stars* system, where the final rankings are a 50/50 combination of votes from judges and viewers. In our case, it was a combination of votes from general APC readers who voted unprompted through the web site, and from APC readers contacted randomly by us who work in the particular industry categories.

At the end of the voting, the products in each category received a ranking order. For example, if there were five products in a category, the product with the most votes from either general readers or selected readers got five points, the second placed four, and so on. The two rankings were then combined to get the final ranking.

With a validation system requiring an email address to prevent the holder from completing the poll more than once, I believe this system allowed the APC tribe to speak their minds. Their winners can be satisfied they've been picked by Australia's toughest judging panel.

tsarno@apcmagazines.com.au



OUR READERS HIGHLIGHTED THE AMAZING PROGRESS OF A CULTURE OF YOUNG ENTREPRENEURS

MAY AWARDS

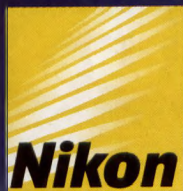


We reserve the Editor's Choice award for the very best products available on the market.



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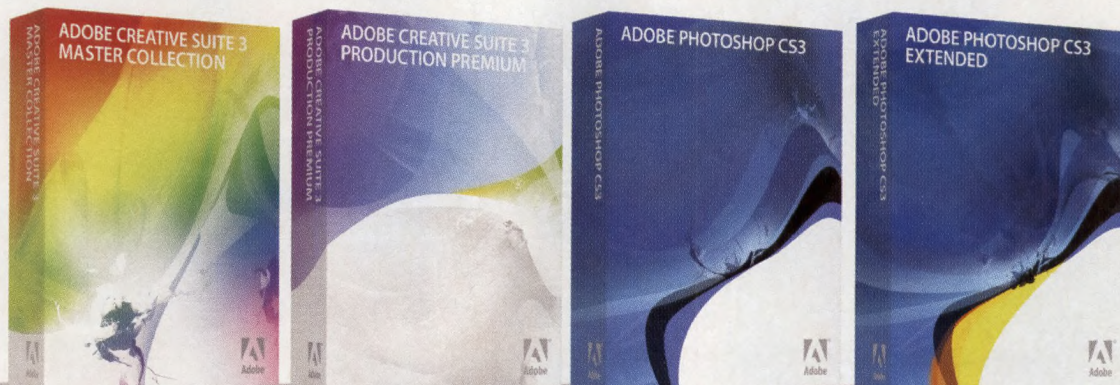
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D40



D40x



Arr: you may not be a Photoshop pirate after all

One of the most pirated applications in the world, Adobe Photoshop, will continue to top pirated software lists in its CS3 incarnation, writes *Dan Warne*.

Adobe says it hasn't implemented any Orwellian copy-protection mechanisms in Photoshop CS3, such as a requirement to run volume licence servers.

In fact, Adobe Pacific marketing manager Mark Cokes points out that many of the people who've furtively taken a copy of Photoshop from work and installed it on their home PC may not have broken the law at all. A little-known fact about Adobe applications is that most come with a two-computer licence — one for work and one for home.

However, Adobe is hoping to squeeze a few extra dollars out of its

genuine customers by adopting a Microsoft-style marketing tack, selling both the basic version of Photoshop (\$1,125) and a new super-premium version, "Photoshop Extended" (\$1,725), hoping most people will opt to spend the extra bucks for the top version.

Photoshop Extended includes high-end features that most people will probably never touch (targeted at 3D and motion graphics producers, architects, engineers, healthcare workers and scientists.) It will be included in all of the Adobe suites.

For those with an insatiable thirst for Adobe apps, the software giant

will also be selling a new \$4,300 suite that includes virtually all of its apps in one box. In what will inevitably become the favoured pirate distribution for markets across South-East Asia, the all-in-one installer will include Indesign CS3, Illustrator CS3, Photoshop CS3 Extended, Acrobat 8 Pro, Flash CS3, Dreamweaver CS3, Fireworks CS3, Contribute CS3, After Effects CS3, Premiere Pro CS3, Encore CS3 and Soundbooth CS3.

The Macromedia name and "MX" monikers are completely gone from the new CS3 application suite: all the apps are Adobe-branded and CS3-

versioned. Also gone are the flowers, feathers and butterflies for app icons: they've been replaced by very literal icons with the application's initials for easy recognition.

Adobe has dropped its web optimisation app, Imageready, in favour of "Adobe Fireworks" (but, in truth, most of Imageready's functionality was already built into Photoshop's "save for web" function).

Favourable academic pricing continues to be available to students. They can snaffle the all-in-one pack mentioned above for just \$1,666 — a good reason in itself to go back to school.

Huge flash memory keys plummet in price

The ubiquitous memory key has unexpectedly dropped in price dramatically, with 8GB high-speed USB sticks selling for under \$100.

The cheapest on sale at the time of writing was the Transcend Jetflash V10 8GB, which is offered for \$93 by HB-Outlet.com.au.

While keys at such low prices might be difficult to find in stock,

even major brands are slashing prices. Widely distributed Comsol has announced an 8GB memory key with an RRP of \$199.

Sony's new 8GB MicroVault is still selling for the more spine-tingling price of \$499, though.

At 8GB, memory keys are just beginning to reach the magical capacity that can fit an entire DivX-compressed TV series on one stick, for easy transportation to a USB-enabled media player.

Dan Warne





Top 4 HSDPA smartphones

Tired of unfulfilled promises of mobile internet access? You should try an HSDPA smartphone, writes David Flynn.

While mobile CPU power keeps improving, the available bandwidth on mobile networks for internet access has lagged behind. GPRS and even 3G have been a pale shadow of the speed of a wired ADSL2+ connection.

Now "operation catch-up" has begun in earnest. Telcos have spent the last six months rolling out slim laptop cards and USB dongles to take advantage of their new HSDPA-enhanced 3G networks. The second wave is about to hit, in the shape of these smartphones fitted with HSDPA transceivers.

1 SAMSUNG BLACKJACK

The cheekily-named BlackJack looks set to repeat its overseas success. Like the Palm, it's tied to Telstra's Next G Network and is geared for HSDPA 1.8. The slim form factor (105g) is appealing, as is the hand-

friendly shape and the \$899 price tag of this Windows Mobile 5 device. The BlackJack's keyboard is also more comfortable than the hard keys of its predecessor, the i320N.

2 PALM TREO 750

Australia's first Windows Mobile-powered Palm device is tied to Telstra's Next G network for now and supports HSDPA for a peak 1.8Mbit/s downstream. Foxtel's Mobile TV is handy for quick updates on news or sport. It's not quite a pocket-sized device and the tiny keys demand precision pecking. Many will also find the \$1,199 price tag hard to swallow. However, it can run the excellent Opera web browser.

3 MOTOROLA Q

Motorola is aiming for a mid-year release for the Q: the delay will be worth it because we'll get the very

latest model, officially named the Q9, which runs Windows Mobile 6 (see page 14) and HSDPA 3.6 for a peak 3.6Mbit/s downlink. The Q9 also finesses the original Q's super-slim profile and sleek chic appeal, including a roomier keypad.

4 NOKIA E90 COMMUNICATOR

The latest in Nokia's long line of Communicator devices retains the flip-up wide-screen and spacious backlit QWERTY keyboard, but is much slimmer than previous incarnations. It has HSDPA 3.6, 802.11g wireless, integrated GPS for navigation and a 3.2-megapixel camera. Most importantly though, it includes Nokia's awesome TruWeb browser, which uses the same rendering engine as Apple Safari. The 800px screen width means you can read web pages without panning around.

ONE CLICK, IT'S GONE: ONECARE GLITCH KILLS MAILBOXES DEAD

The worst thing that can happen to your email is to lose it all to a virus, right?

Well, no, actually. Microsoft's new all-encompassing security suite, OneCare, is said to detect a virus in a single email and then delete your entire mailbox.

In what can only be described as a reputation-crushing blow for its new OneCare security suite, Microsoft has admitted that the software includes a major bug that may, under some circumstances, delete an entire mailbox rather than just the affected email. "Only" users running Outlook Express in

Windows XP or Office 97/2000 are affected by the glitch.

This bug was present in the beta version of OneCare and was, at one stage, squashed by Microsoft programmers, but then found its way back into the final release, prompting speculation that at some stage, code branches were mixed up.

Dan Warne



THE (A)PC REVOLUTION

May 1987



NEC'S MULTISYNC COLOUR MONITOR

"The MULTISYNC colour monitor is so advanced it will probably never need to be upgraded. . . You see the MULTISYNC automatically scans all frequencies between 15.5kHz and 35kHz — which includes every colour graphics board now in use.

It also adjusts itself to suit, with a maximum resolution of 800 (horizontal) by 560 (vertical). It's also compatible with IBM PCs. And all IBM-compatibles."

IBM PERSONAL SYSTEM /2

"Reinforcing the AT/E as the standard PC keyboard, the 102-key unit includes a separate cursor and numeric keypad — and twelve function keys seem to be the new gospel. The stylish mouse is a standard item.

The new machines lack the bulk of previous PCs and the 3.5in disk drive may now be here to stay. The mains switch — a clumsy affair — has migrated to the front while the keyboard is now on the back."

NOW FUJI BRINGS YOU EXCELLENCE IN FLOPPY DISKS

"There's nothing more frustrating than having a disk go down when it is filled with valuable data. That was our understanding when we started designing our floppy disks. We decided to do it right! The result is a range of products that is so reliable, it carries a lifetime warranty."



Want to nominate a dumbest moment in tech? Send an email with the subject line "Dumbest Moments" to dwarne@apc.com. All correspondence becomes the property of APC.



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END OF THE ROAD

Two factors are responsible for the coming capacity crisis: more people are getting online (breaching the one-billion mark in 2006), and they're transferring increasingly bigger files. The big villain is video, much of it illegally traded on peer-to-peer networks and BitTorrent. Add the growing market for legal downloads, video chat and IPTV and it's clear the internet is heading for a big jam.

Internet on brink of collapse

Video is overwhelming the internet: how much is too much?

Say goodbye to cheap connectivity: the internet is on its last legs and the only way to save it is with a massive cash injection — the conclusion of analysts Deloitte and Touche, whose 2007 Telecoms Predictions report suggests the internet is months away from a capacity crisis.

The villain is video, which now accounts for more than one-third of all internet traffic. Even Google, whose YouTube site is one of the most visited video portals, agrees. Google's head of TV tech admitted that "the web infrastructure, and even Google's... doesn't scale. It's not going to offer the quality of service that consumers expect."

As video becomes more popular and new services such as the Joost

video-swapping system launch, its share of online traffic is likely to increase considerably.

While the US net neutrality debates have centred on whether high-bandwidth sites should pay more for their connectivity or whether users should pay more for fast access, Deloitte believes the problem could be much bigger: "The unrelenting growth in internet traffic during 2007 may overwhelm some of the internet's backbones, the terabit-capable pipes connecting continents." If that happens it won't just affect video sites or power users: it will effect every single net user.

THE FIX WILL COST US

The only way to increase backbone

capacity is to replace or improve existing connections with bigger capacity ones or to invest in more efficient transmission technology, and that costs money — but the price that ISPs pay for bandwidth has been in freefall for years.

"If the price paid for bandwidth continues falling," Deloitte says, "there may be no economic rationale for either upgrading or laying new fibre."

Not everyone believes that the internet is in trouble, though. Joost CEO Fredrik de Wahl, whose peer-to-peer video system could be to the internet what the iceberg was to the Titanic, argues that the "infrastructure providers have done a great job expanding network capacity... [firms will] develop new

compression technologies, fibre utilisation and delivery strategies to enable ever more traffic to flow."

However, video's demands on bandwidth show no sign of abating. According to router firm Juniper Networks, YouTube alone generates more traffic than the entire internet did in 2000, while Cisco predicts that by 2010 the traffic to and from 20 broadband-connected homes will be more than all of 1995's internet traffic put together.

It seems that, like real traffic, internet traffic expands to fill the space available. We build more roads that get clogged with more cars. Road users already face toll roads, congestion charges and jams. PC users may soon experience the online equivalents.

Olympus launches the world's smallest DSLR

Olympus aims to put a digital SLR camera into the hands of every person who uses a compact digicam.



Olympus' new ultra-compact DSLR camera is targeted at the 95% of the market still clinging for dear life to digital happy snappers.

The \$1,299 E-410 is the lightest, smallest and, Olympus claims, easiest-to-use DSLR in the world, while still retaining their most important feature: interchangeable lenses. Olympus' lenses are 40%

smaller than regular SLR lenses but still compatible with the "Four Thirds" lens mount system used by Kodak, Olympus and Fujifilm.

It also has full auto focus, 10-megapixel resolution, dust reduction and the Live View function which allows you to preview images on the built in LCD before shooting — a feature typically found only in compact digital cameras.

Once the lens is removed, the E-410 body is only 12.9 x 9.1cm and weighs in at only 375 grams, not

much larger or heavier than many compacts. It's about 30% smaller than Canon's market-leading EOS-400D and about \$200 cheaper.

However it still has all the knobs and buttons for optional manual control — the other essential ingredient in digital SLRs. This perceived complexity may prove a barrier for Olympus in its push to replace the compact digital market with its digital SLRs: making a camera small isn't the same as making it easy.

Christopher Zammit

Google set to start charging

The free ride may be coming to an end...

As Google's portfolio continues to expand and the company begins tying its different services and accounts together, the buzz is that paid-for services are closer than we thought.

The timing could not be more convenient, as Google Checkout has been launched to handle the payment issues. However, the predictions are — Google users will be pleased to hear — that charges will only be incurred for using new and upgraded services.

Gmail offers an obvious example. When launched, in a world of 10MB inboxes, it was easy to claim that it was the last inbox you would ever need. A couple of years later, 2GB just isn't what it

used to be. Would you pay a few dollars a month to up that to 10GB? You're Google's perfect customer.

In a similar vein, Google Apps For Your Domain — basic web hosting, webmail, IM and calendaring — has been updated to a pay-for service. \$50 per user buys you 10GB of space and 24x7 technical support. You also get a guaranteed level of service and the option to switch off the adverts. (The free version is still available for personal and small-scale use).

It's worth pointing out that many of Google's services simply aren't that popular. Gmail, while getting plenty of press, has just 60 million accounts to its name; a firm third place to Microsoft Hotmail

(236 million users) and Yahoo! Mail (the winner, with 239 million).

Similarly, Picasa didn't even dent Yahoo!'s Flickr, while Google Reader offered little resistance to Bloglines, NewsGator or the other RSS services out there.

Bottom of the pile is Orkut, which failed to find any real traction in the English-speaking market, although it did become a roaring success in Brazil.

Does this matter? Google always says no: that overall winners and losers simply aren't that relevant. Fair enough, but with so many small projects, so many different whimsical ideas, and so many uses for the company's infamous 80/20 timesplitting system

(the 20 per cent spent on experimentation and personal projects), eventually the hammer has to be dropped.

Google Answers, which was one of the company's few paid services, has already bitten the dust, and there have been murmurs that a product's appearance in the Google Labs may no longer mean a lifetime of web service.

None of this means your favourite tools are disappearing any time soon, and Gmail and non-beta-branded sites continue to do well. But it begs the question: are there web-hosted tools you can't do without? What happens when they spend too long without earning their keep?



The Google Appliance looks like a giant cheese, but gives enterprise users a personal search tool for internal documents.

Dream system

Linux super cluster

Drooling over those 100-core CPUs Intel has been cruelly dangling in front of our faces?

Turns out all you need for a 64-CPU Linux super-cluster are eight PlayStation 3s.

North Carolina University associate professor Frank Mueller tied eight of the black beasts together to create "64-logical CPUs", delivering a high-powered computing environment for a fraction of the cost of the

supercomputers on the market — just US\$5,000. Plus, it comes in piano black.

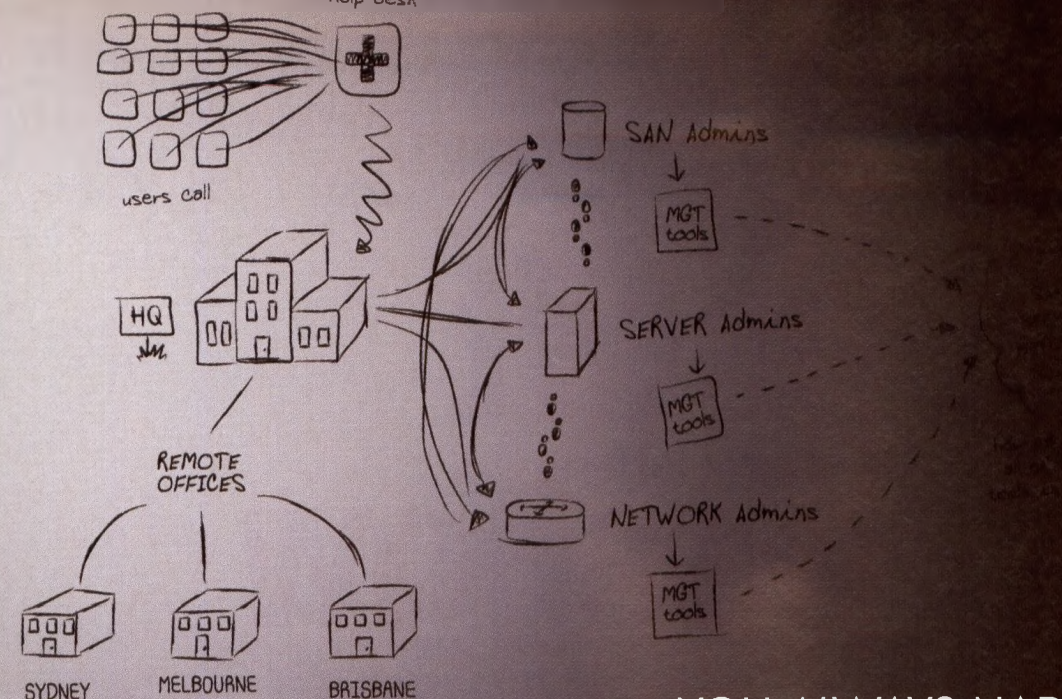
"Scientific computing is just number crunching, which the PS3s are very good at, given the Cell processor and deploying them in a cluster," Mueller says. "Right now, one limitation is the 256-megabyte RAM memory constraint, but it might be possible to retrofit more RAM. We just haven't cracked the case

Well, it may be cheaper than your standard supercomputer, but at the cost of eight PS3s, you'll still need plenty of Mueller...

and explored that option yet." The PS3 cluster at NC State does not break into the top 500 fastest computers in the world, but Mueller says he could do it merely by adding another 9,992 Playstation 3s to his cluster.

Read more about it at <http://moss.csc.ncsu.edu/~mueller/cluster/ps3/>.
Dan Warne





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Microsoft

TAKES AIM WITH

Crossbow

David Flynn takes a close look at Microsoft's "other" OS, which it hopes will duplicate the desktop success of Windows in the smartphone arena.

Windows Mobile 6 (codenamed "Crossbow") is the latest version of its OS for smartphones and PDAs. Like its desktop sibling, this cut-down version of Windows has trodden a bumpy road from its 1996 debut as Windows CE (the suffix stood for "compact edition"). Hardware form factors failed to excite buyers, including the original compact clamshell PDAs and sub-notebooks, while others (such as a pager-like device codenamed "Gryphon") were abandoned altogether.

It wasn't until the era of the Pocket PC and the iPAQ that the platform found its feet, while the later arrival of the smartphone and the BlackBerry-led push email revolution provided enough of a tail wind for what was now named Windows Mobile to take flight.

While the first devices aren't

due until mid-year, APC spent some time with a range of hardware running OEM pre-release builds to see what was new in the world of Windows Mobile.

SMARTPHONES GET PUSHY

The Windows Mobile 6 interface boasts some obvious Vista-inspired touches, including reshaped "bubble" buttons lit by translucent glows, but Vista's influence is literally only skin-deep.

Push email is a cornerstone of Windows Mobile 6. Available in Windows Mobile 5 only as an update to the device (if supported) and with Exchange Server 2003 running the SP2 update, push — or as Microsoft calls it, "DirectPush" — is now native to both Windows Mobile 6 and Exchange Server 2007.

This allows users to wirelessly sync the email, calendar, contacts and tasks module of Windows Mobile's Outlook Mobile app against Exchange Server, as well as create meetings, manage

invitations and set your out-of-office message.

Users can also search a large Exchange-based inbox from the mobile screen without having to first download all messages.

Other corporate crowd-pleasers are the Remote Desktop Mobile tool, which permits rudimentary control of a desktop or laptop PC over a mobile network or Wi-Fi connection, inbuilt support for VoIP (using the SIP protocol) and encryption of memory cards

so they can be read only on a particular device or through a desktop sync session. Windows Mobile 6 devices also sport a suite of Windows Live applications including instant messaging and search, with the option to add a Live Search filed to the bottom of the Today screen. The new messaging client supports multiple simultaneous chats and file transfer.

Of the applications in the platform's pared-down version of Office, dubbed Office Mobile, only Outlook Mobile makes any strides forward. In addition to enhanced Exchange synchronisation, it finally supports HTML (including web-based email from Gmail and Hotmail) and rapid inbox searching. Outlook Mobile also gains a set of one-click shortcuts for common tasks such as Reply, Reply to All, Forward and Delete, while the Calendar gets a handy ribbon to show busy and free time at a glance.

Inbuilt apps are lacking in other areas. Internet Explorer Mobile still has no tabbed pages, and the mobile versions of Word, Excel and PowerPoint still use different file formats to their desktop equivalents. Thus, despite improvements to the round-tripping of documents to and from the desktop, the process still requires an automatic conversion between file formats.

Closed-door briefings during the development phase of Windows Mobile 5 indicated that Microsoft intended to introduce

Windows Mobile 6 is MS' latest shot at the mobile device market.

WINDOWS MOBILE 6 WALKS THE PLANK

A pirated version of the code for Windows Mobile 6, which Microsoft launched at the 3GSM mobile phone conference, has hit the net before a single WM6 phone has gone on sale.

It's the handiwork of "Kyphur", a moderator at the discussion forums on the XDA Developers' site, who has released a hacked version of the code for Windows Mobile 6, aka "Crossbow".

Because the foundation Windows Mobile codebase has to be

accompanied by drivers for each specific model of PDA or smartphone, the pirated version of Windows Mobile 6 is tuned to run only on one Windows Mobile device.

Fortunately that device is the "Hermes", one of the most popular smartphones produced by Taiwanese company HTC (an OEM/ODM responsible for an estimated 80 per cent of the world's Windows Mobile devices).

The Hermes is sold under a wide variety of brands and badges, including the O2 Xda Trion, Cingular 8525, i-mate JASJAM, Dopod 838Pro, T-Mobile MDA Vario IIm, Vodafone v1605, Orange SPV M3100, NTT DoCoMo hTc Z and SoftBank X01HT.

The code, Kyphur says is based on a plain "vanilla" edition of Windows Mobile 6, for Hermes has been cheekily dubbed Windows Mobile XDA Live.



direct support for native Office formats. This failed to appear in that release or in Windows Mobile 6, most likely due to the impending shift to XML-based file formats in Office 2007. With that box now ticked, it's expected that Office Mobile will move across to using the same XML documents with the release of Windows Mobile 7, codenamed "Photon" (and due in the first half of 2008).

NEXT STOP: "PHOTON"

Photon is also rumoured to be the release which will unify the Windows Mobile platform (built around the new Windows CE 6 framework) as a single OS rather than the current offering of three versions for three different types of products — PDAs, PDA/phone

combo devices, and smartphones (without PDA touchscreens).

"We definitely want to merge those together," affirms Suzan DelBene, Microsoft's vice president of the Windows Mobile and Embedded Devices Division. "That's something that we've been working on and that time frame is probably when we'll do it."

DelBene told APC that, to some extent, the rapidly-changing hardware landscape caught Microsoft by surprise. "With devices like the Samsung BlackJack and Motorola Q, where you have a QWERTY keyboard in what was, traditionally in our parlance, a smartphone, this really highlighted the challenges and also that we'd really built for what was the Pocket PC in the past. We really

more componentised". Windows Mobile 6 is definitely a step in the direction of a unified mobile operating system. All three editions of the OS include the Office Mobile suite, with full editing capabilities for Word Mobile and Excel Mobile (PowerPoint Mobile remains capable only of running slideshows, not editing slides), rather than the viewing-only mode of Windows Mobile 5 Smartphone edition.

Microsoft has also renamed the three products to de-emphasise the hardware. Windows Mobile 6 Classic is the base build for the shrinking PDA market. Windows Mobile 6 Standard will power smartphones while Windows Mobile 6 Professional is the engine

of combo PDA/phone devices. The lines are admittedly blurry, especially in the last two categories — we know plenty of "mobile professionals" who use smartphones.

DelBene also explained the reasons for moving from the year-based tags of Pocket PC 2002 and Windows Mobile 2003 to the version-based Windows Mobile 5 and Windows Mobile 6.

"Unlike Windows on the desktop PC, where you ship to the entire universe at once, when we release the software is not when it always hits the market. There's a delta between when we release the OS and when OEMs release their devices, and they also release at different times, some sooner than others and some with new devices later."

Indeed, WM6 was pirated and available on download boards in February — long before the release of the first handsets officially bearing the software. "The OEMs told us that putting the date in the software may not actually serve them well, especially if the date on the OS is older. If I buy a new device on the market and it runs Windows Mobile 2005 but it's actually 2007, I'd be saying, 'I want Windows Mobile 2007!'" **APC**

USERS CAN ALSO SEARCH A LARGE EXCHANGE-BASED INBOX FROM THEIR MOBILE WITHOUT HAVING TO DOWNLOAD ALL MESSAGES



◀ The Windows Mobile 6 interface boasts some obvious Vista-inspired touches.

THE creators Microsoft's OFFICE REFIT

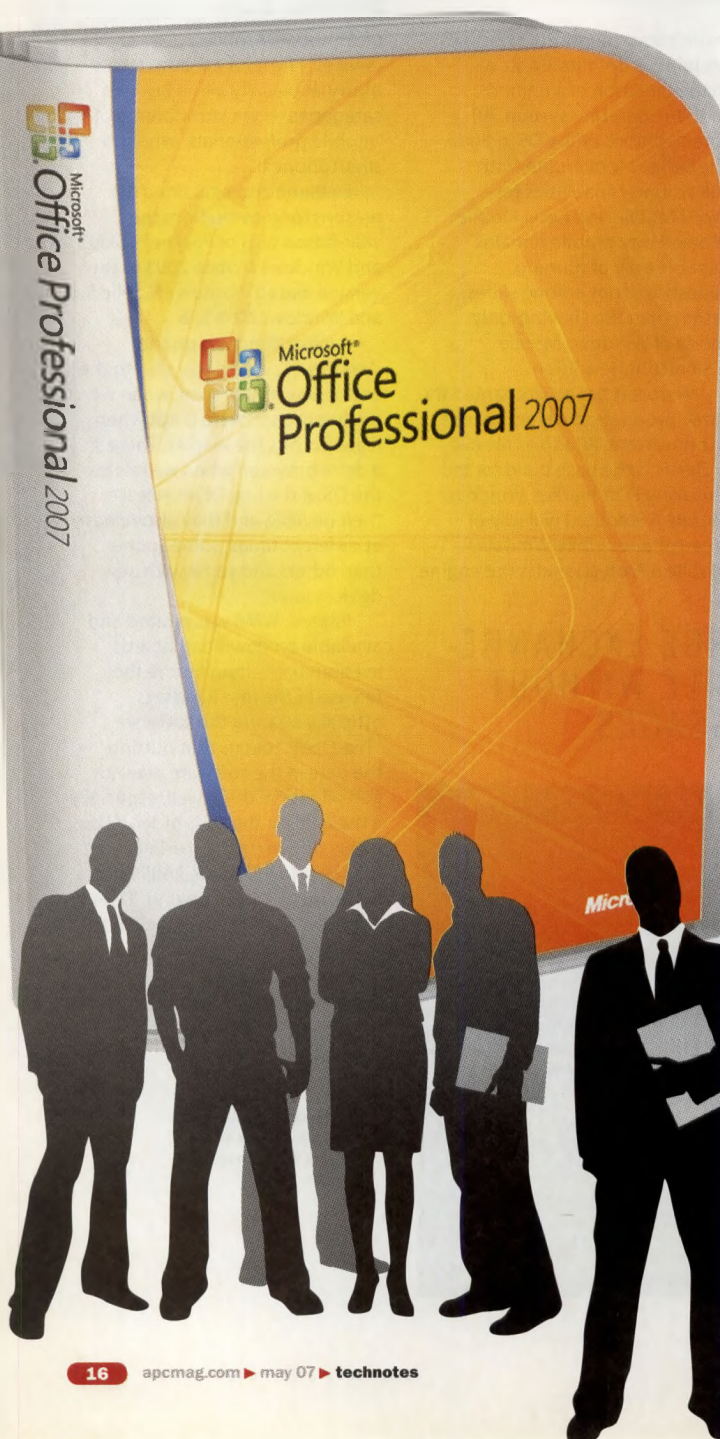
David Flynn speaks with Jensen Harris, Group Program Manager for Microsoft's Office User Experience Team, on the inside story behind the radical new user interface of Office 2007.

Jensen Harris is a solid yet softly-spoken man who drove the dramatic interface-lift which saw Office 2007 shed the menu and toolbars that had been part of its DNA for over 20 years.

His original calling was as a musician (Harris still plays a mean trombone) and his intended career a composer, but after spending two summer internships at Microsoft, Harris ended up on the user interface team for Outlook in 1998, before moving to Office 2007's newly created User Experience (UX) team in 2003.

APC: How did the notion of giving Office such a radical refit come about?

Jensen Harris: It originated with Steven Sinofsky, who was then in charge of Office, although now of course he's running Windows. Steven had certainly noticed, like we all had, the growing interface clutter around the core Office apps, and he thought we should put a set of people together and at least think about this. But I sometimes think that he didn't really expect us to actually replace the entire UI! Maybe Steven thought that it





Jensen Harris on Office '07: "I knew we could do it if we made the right decisions."

would take a lot to budge people from the way things had been for 20 years, so perhaps his thinking was to ask for a mile in order to get just 200 feet. But we ended giving him the whole mile, and then some!

APC: What sort of people did you have on the UX team?

JH: On the core team, which is separate to the usability teams on each individual Office application, we had an extremely eclectic mix. In addition to traditional computer science and user experience research, there were people with backgrounds in architecture, theatre set design, cartography and psychology. We also had people from many different countries and the team was half women and half men.

It was a very diverse team which let us bring different perspectives to the project. And that's been a good thing, because a user interface is really an international language, so you need people who come from different backgrounds and cultures to contribute ideas. And it's also as much art as it is science, so you need people who think artistically and people who think scientifically. That's the only way you end up with something that isn't designed only for geeks!

APC: How do you begin to tackle a project of this magnitude?

JH: It was enormously daunting at first. The myriad possibilities are in some ways almost paralysing; it's like the freedom to do anything can keep you from doing anything or at least anything good.

So you have to put some structure behind it. If we just started drawing a new UI we might have ended up with something

that we liked, but might not have actually solved the problems that we needed to solve.

We started with researching the problems people were having with Office in a very deep way: watching people at work, usability tests, feedback that people send us. We broke this down into several hundred related areas of problems that people had, which rolled back into bigger and bigger areas, things like efficiency and discoverability of features.

Then we built a list of design tenets, which were our incontrovertible beliefs about what a good UI would look like. This allowed us to consistently evaluate designs and became our bible for making every decision along the way. After that we had literally hundreds of different ideas!



A USER INTERFACE IS REALLY AN INTERNATIONAL LANGUAGE. . . IT'S ALSO AS MUCH ART AS IT IS SCIENCE

Some were very radical — totally speech-based, or gesture-based — and many were more incremental. We'd talk about them, in some cases we yelled about them. We put them up on the wall, we'd take interesting parts out of them, we'd throw them away. . . but after about three months we'd pretty much settled on the ribbon as a base concept.

We then prototyped it on paper by drawing "screenshots" of how it might work in an application. We chose PowerPoint for this because, of the three document-authoring apps in Office, it has the least number of commands, and if we couldn't make it work for

PowerPoint, there was no chance it was going to work for Word or Excel.

APC: Were you ever daunted by the sheer size and scope of what you were trying to achieve?

JH: Maybe I'm too optimistic, but while I knew it was going to be hard, I also knew we could do it if we made the right decisions.

I remember the first build without menus or toolbars, about three or four months before Beta 1, and the apps had been so torn apart — it's such an invasive thing to take out menus, which have been coded into Word's DNA since the very first version of Word for

Windows in 1989. I looked at the build and thought, "Wow! If by some chance this doesn't work, and I think it is going to work, but if it doesn't, we've made a huge mess!"

APC: Can we expect to see more of the Ribbon in the next versions of Office for both Windows and the Mac, and other Microsoft programs as well?

JH: The Ribbon interface can help to solve problems for any program that has many of the same challenges that Office faced: a large feature set that is causing complexity, people having a hard time finding features, a mature program than needs a reorganisation.

We're in the early stages of planning the next version of Office, and we have some tricks up our sleeve still. We didn't implement the Ribbon in Publisher 2007, or the main application window in Outlook 2007, so those are certainly something we're looking at.

The Office for Mac team is a different team and in some ways they have a trickier time ahead than we did because the Ribbon replaces menus — the whole idea of the Ribbon is that there's only one place to look for features. But a top-level menu bar is part of the Mac OS. If you end up with menus and toolbars and the Ribbon it can be trickier, so they're trying to determine how to manage that complexity. They have a desire to bring some of the more visual aspects of our UI to the Office for the Mac, but still remain true to a

Mac-like user experience. There's certainly a lot of enthusiasm from other application teams who are thinking about whether the Ribbon UI can solve problems in their own apps, so undoubtedly we'll see more of this UI in Office in the future, and maybe even elsewhere at Microsoft.

We're also making the Ribbon available to other software developers, because we realised that we haven't created just a new interface for Office — but the Ribbon is a viable next step in the progression of mouse-based and keyboard-based UI — it's the next thing after menus and toolbars. **ETC**



Help is on the way

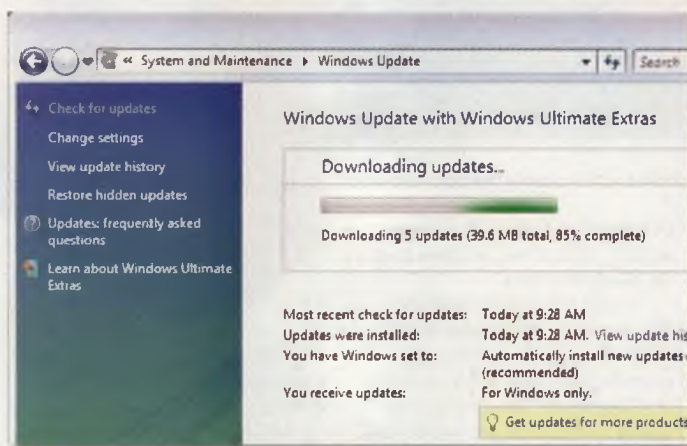
Help! I need somebody! Finally, with Vista's integrated Help functions, the feature is no longer a misnomer...

In previous months I've discussed how many of the changes introduced in Windows Vista are going to require a lot of user adjustment, learning and re-training. Features like the new Explorer shell, file metadata and searches, and the new Start Bar, mean many users will have to re-learn what they took for granted on Windows XP, at least before they're productive with Vista.

Happily, there's one feature which fell out of use in Windows XP but has been given a new lease of life in Vista — the humble Help.

In XP, if you went to Help and Support in the Start Menu, you'd get a series of help screens that were so thoroughly unhelpful that it simply wasn't worth it. This is certainly no longer the case with Windows Vista. Help has been added into every application that comes with Vista; all the topics have been thoroughly integrated and cross-referenced with each other; and Vista downloads the most up-to-date content when you ask for it. Topics are very user-friendly and intuitive, but, even more impressively, each Help topic pre-empts further lines of questioning.

For example, if you look at the Help feature for media sharing, there are loads of embedded links to other Help pages that explain the



Gone are the days of convoluted non-Help responses. The new Help in Vista is dramatically improved.

various implications of any changes you're being prompted to make — allow Firewall exceptions, turn on a particular setting and so on. Additionally, when you press F1 to get Help, the default topic loaded is specific to whichever application you're currently using.

The benefits to users are considerable. The overall experience is that, finally, Windows is looking out for your interests, rather than leaving you to flounder. Of course, it's going to take some time for people to realise this — using Windows Help is a practice which has fallen out of use.

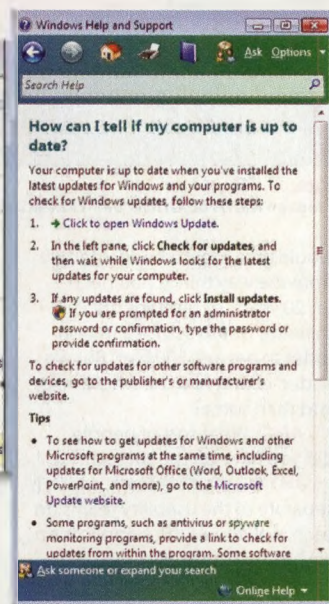
COMPLETE BACKUP

Another welcome feature which is of great help is the ability to create complete system backups. This isn't like the backup feature in Windows XP, which allowed you to back up files and system settings — the full

backup feature in Vista makes a complete system backup that you can use to perform a full system restore in the event of system failure or corruption.

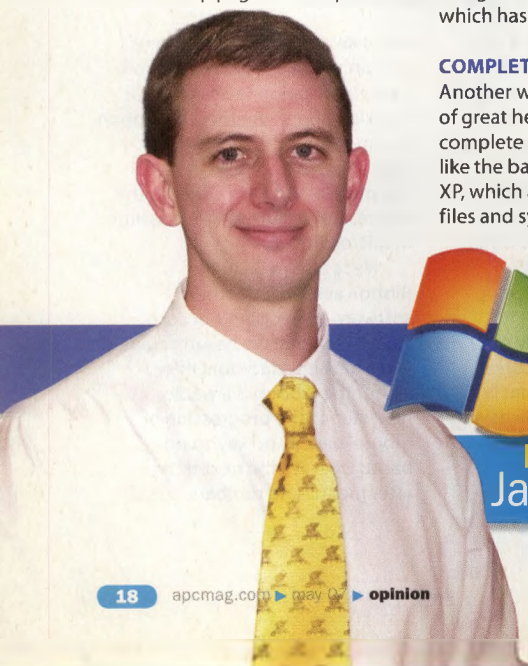
The backup can be saved to a local, non-system hard drive or direct to DVD if a DVD burner is available — the backup wizard will work out how many single-layer DVDs are needed. You can then perform a restore using the recovery options available from the F8 advanced boot options or from the repair functions available on the Vista DVD.

Restoring files is equally straightforward. You can restore from the latest backup made, from older backups, or even from backups made on completely different systems. With the addition of an add-on available from the Microsoft web site, you can even restore files from backups made on



different versions of Windows. You can also run basic repairs, restoring system settings from restore points. The whole backup/restore interface is very easy and intuitive, and again plugs in directly to Vista's excellent Help system.

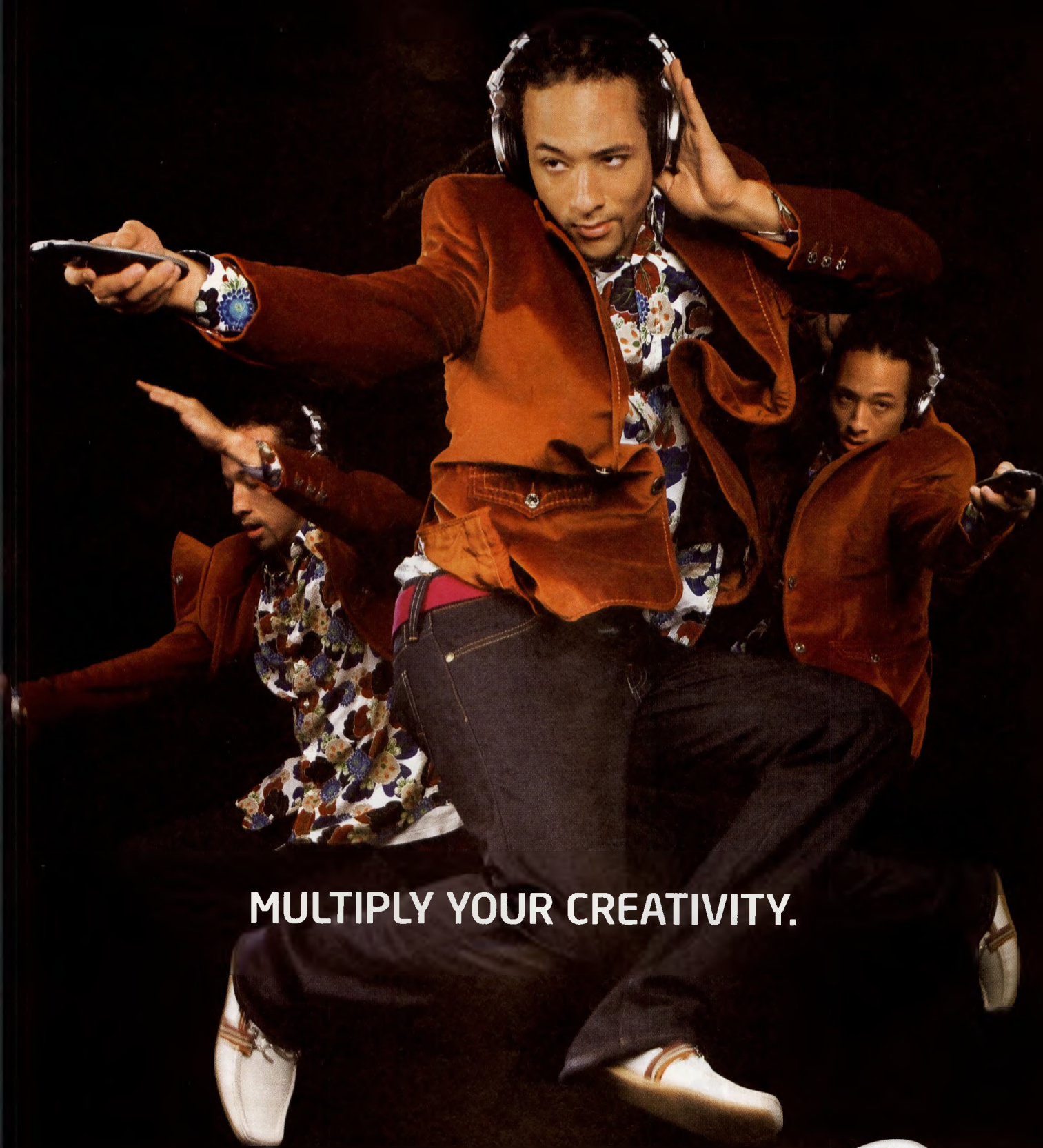
Vista's highly-integrated approach does take some getting used to, and many users (especially power users) have complained that it's more restrictive than beneficial to productivity. This may be the case, and there's no denying that using Vista well will take some re-education, but application integration has enabled Microsoft to make some drastic improvements to the whole Windows "experience". Learning to use a machine that makes everyday tasks easier — and gets you over the inevitable hurdles — is well worthwhile. **BTIC**



HastaLaVista

by
James Bannan

James Bannan is a systems manager at St Leonard's College (Vic) and APC's resident Windows expert. He'll be checking out Vista for you every month.



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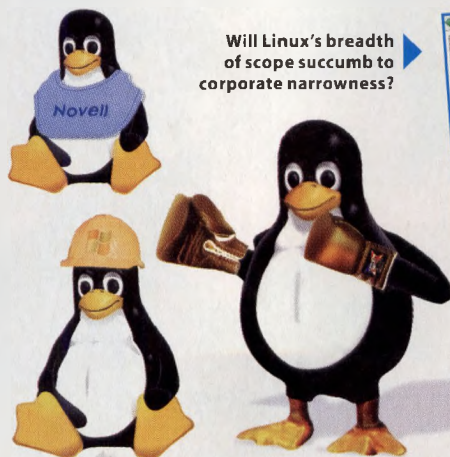
When choice is bad

Linux's history has been one of variety and innovation — however, now that trend is threatened by the opportunity for the OS to go mainstream.

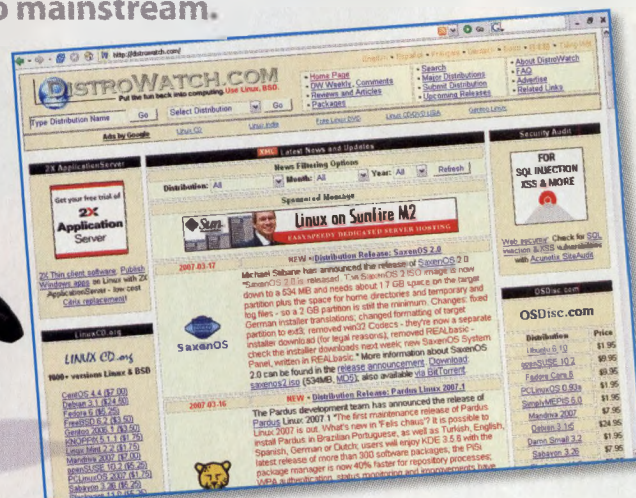
As an advocate of open source software, choice is something I'm rather familiar with (and most certainly fond of). In the open source world, we have literally hundreds of Linux distributions to choose from (the popular distribution tracking site www.distrowatch.com currently lists over 500 distributions), and within these we frequently have a selection of different programs all designed to answer a particular need — from something as huge as office software, to something simple like a network status icon, there is almost always a choice of programs to use.

And it's wonderful.

As the axiom goes, you can't keep everyone happy all of the time. So, having multiple programs can give people choice on what's best for them for functionality, features, or simply design. This breadth of choice is, of course, fundamental to the success of Linux so far — not only because it allows people to use something that's best for them, but as open source, more programs mean a greater software base for future developers to build on. The limit becomes the imagination and passion of open source software developers — not a timeline or a budget, nor a restricted design goal (the type of which that closed source development is bound to).



Will Linux's breadth of scope succumb to corporate narrowness?



IT'S FANTASTIC TO BE ABLE TO BUY A DELL PC WITH LINUX, BUT NOT SO GOOD THAT ONE DISTRO WILL BE FORCED INTO THE LIMELIGHT

And we need only look at the delays, cost and ultimate buggy release of Vista for proof of this.

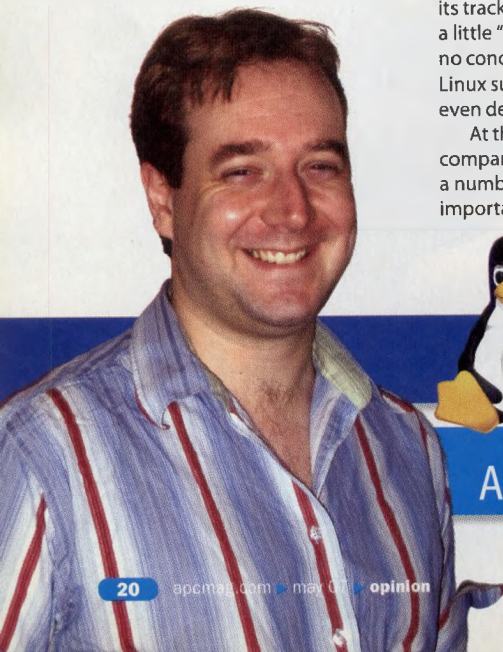
But — is choice always best? One of the most attractive features that drives Linux adoption will also soon hinder it. Dell, of course, recently announced its intention to bundle Linux with its PCs. If there was ever a sign of Linux gaining mainstream adoption as an OS, this is it. But then, suddenly, the company stopped in its tracks — the announcement was a little “ahead of time” and there was no concrete plans yet of just how this Linux support would look. It hadn't even decided on a distribution.

At the time of writing, the company is running a poll asking a number of questions — the most important of all being, the one,

single, distribution Dell should support. And it can't be any other way — there can only be one distribution, or it simply becomes a costly nightmare for its staff.

And this creates a bit of a conundrum — when a distribution is settled on, it'll be both a blessing and a curse for Linux. It's fantastic that it might now be possible to buy a PC with Linux pre-installed by one of the world's largest manufacturers, but not so good that Dell's gigantic influence on the market will see this distribution propelled into the limelight of a whole new generation of users — and not any others. As open source developers continue to develop, it will need to be for this platform — for programs to be accepted and to be used, in what

will ultimately grow into the largest market share for Linux distributions. Distributions can and do differ in their structure and package management, and, regardless if another system is better, developers will need to standardise on the largest. In the name of standardisation, choice will be lost. And maybe that's just what Linux needs at this stage: certainly, standardisation has been key to the discussion of Linux for some time now, precisely to ensure a consistent future for Linux on the desktop. But considering its sheer breadth of creativity, development and innovation, enabled by choice, perhaps this will come at a cost. Choice drove Linux this far; will it now give way to the generic? bit.ly



by
Ashton Mills

LinuxWindow

Editor of the Linux Pocketbooks series, and more recently Atomic magazine, Ashton has been a tech journo for over 12 years, including five years with APC.



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Brains blackout

Just when we think we've discovered the dumbest end users of all time, our readers manage to find new ones vying for the honour...

Sujeet Rana from Cherrybrook, NSW, used to work on the helpdesk at IBM looking after Westpac clients. He says: "I once received a phone call from a user informing me that their desktop computer was no longer working. Apparently, when the user tried to turn on the machine, nothing would happen. In going through the standard questions, I asked the user to check if the cord was plugged into the back of the machine. The user then mentioned that he was unable to check because it was too dark. Confused, I asked the user to further explain the situation — he mentioned that the building was in the midst of a blackout and since the lights (not to mention everything else in the office) was off, he was unable to see if the cord was plugged in..."

FIX THIS BOX

We'd have to say that this story from Rod Gaynor, the ICT manager at Santa Maria College in Attadale, may have identified the dumbest end user of all time. Truly, Gaynor says: "I recently sold several obsolete work machines to various friends and acquaintances to help them enter the world of PC usage.

One woman rang me and asked how to log on. I explained the procedure to her over the phone, but after several unsuccessful attempts at getting her to understand the process, I said 'I'll set it up so that it is easier for you. Don't worry about the rest of the gear; just bring me the box and I'll take it to work and fix it for you.'

Sure enough, the next day she showed up at my house carrying the cardboard box that I gave her the PC in. It was empty of course."

OK, anyone who thinks tech support can fix your PC by operating on its empty cardboard box takes the ultimate prize.

MOUSE MATE NOT BIG ENOUGH

Not the dumbest, but close. Craig Hollens from Dianella, WA, recalls supporting a site some years ago that converted from a DOS-based accounting system to a Windows-based one. He says: "The manager of the accounts department wanted a 'bigger mouse mat'. I asked why and she showed me how she gets to the edge of the mat but the pointer is still in the middle of the screen.

I showed her how to pick up the mouse and replace it on the mat. She then castigated me for not including this tip when I developed the training course for the new system. There are some times that you just have to walk away shaking your head."

AFTER HOURS CALL

If some end users are not dumb, they're arrogant or just plain insensitive to the sleeping habits of tech support personnel. Mark Rieschick from Blackburn North in Victoria supports a point-of-sale and stock-control system in the hospitality sector. "We offer 24-

Hmm... maybe I'll let him fix his own damn PC next time...



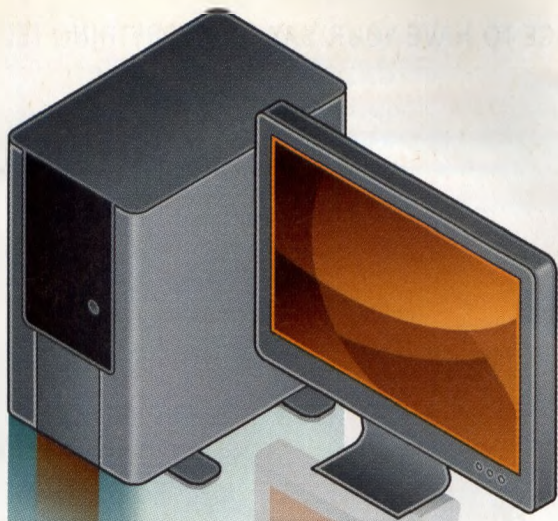
Help! My PC won't turn on! And all the lights are off because of a power blackout...



End User

from
The readers of APC

APC readers who deal with new computer users or incompetent IT administrators share their survival stories.



My Computer

Don't worship false icons: sometimes "My Computer" doesn't really mean "your computer"...

hour emergency support to our customers, but after hours support is sent through to the tech on duty (who has worked a full day) via a pager system. I had a call one morning at about 2am, which, not surprisingly, woke me. The user on the other end of the line was very loud and cheerful and was having a minor issue with the system. After waffling on and explaining his issue he asks, 'Did I wake you up mate?', to which I replied, 'It's 2am in the morning mate. . . yeah.' He chuckled and said: 'Well, if I'm up, you can be up!' After figuring out that his issue wasn't urgent and could wait till the morning, I explained to him that I'd have the helpdesk call back during office hours to resolve the issue. Foolishly, the user supplied his mobile number as the contact number.

So, first thing in the morning at 9am I called him back, and guess what, I woke him up. I asked him 'Sorry mate, did I wake you?', to which he mumbled, 'Yes'. I replied, 'Well mate, if I'm up you can be up.'

He didn't find it so funny this time around and I've never had an after hours call from him again."

GOOGLE COMES WITH IT

Our stories about academics last month has unleashed more anecdotes about the brains in our universities. We'll just mention this one, in case academics think we've got it in for them. Tim Rodrigo, from South Melbourne says: "We recently had some visiting academics from a university in our office, and one of them asked me if he could get onto a computer to access his webmail. I said that sure, he could use the computer in the corner office. He asked, 'Will it have Google on it?'"

SURFING THE WEB

We thought children were naturally

WE NEED YOUR HELP

Due to reader concerns, HelpDesk Ed, our mascot on the far left, will need to lose his gun. We want to replace it with something some readers will find less offensive. Please email your suggestions to apcenduser@acpmagazines.com.au.

computer-savvy. Until now. Tony Falloon from Yarraville in Victoria was given a laptop to fix. "I was told by the owner that his children had been surfing on it and it stopped working. I fired it up and there was no video on the laptop's LCD screen. I connected an external monitor and it worked fine. Careful inspection of the video ribbon cable and connections showed no visible damage, and upon reassembly, still no video! The owner of the laptop rang me to see how I was going, and when I told him the bad news, he explained to me his child's idea of a joke was to surf on the laptop by opening it fully and standing on it while trying to balance on the spine! He was going to buy a new laptop; I recommended he didn't spend too much for obvious reasons. I hope this tale horrifies you as much as it did me." And we'd love to know what happened to the child.

MYSTERY BEEP

Andrew Devlin, a tech support agent, was called in to fix a computer that kept beeping, driving the owner insane. "When it was still beeping whilst turned off stumped me a little, so thinking it may have been a speaker error, I got them to unplug the machine, open the case and disconnect the internal chassis speaker. To my surprise, it kept beeping. With no

BIOS errors and being a fairly new PC, I told them to take it back to the retailer and have him check the BIOS warnings and the BIOS battery. Other than that I was completely stumped. Days later I received a phone call with an explanation. What had in fact been beeping was not the PC, but the house smoke alarm attached to the roof directly above the PC. A new 9-volt battery and the computer was fixed. Very funny!"

THE MY COMPUTER STORIES

When Microsoft created that little icon on everyone's desktop called My Computer, they had no idea what confusion they would cause. Byron Jeffery, from Yeppoon, Queensland, was working for an ISP as a helpdesk support technician, when he took a call from a user who had just signed up with the ISP and needed to set up an email account. "He was a first-time email user and very eager to have email up and running on his PC. So, in order to establish where he was at, I asked him if he was in front of his PC, to which he said yes. I then asked him to please click on 'My Computer', which was followed by a few seconds of a confused silence, before he said, 'Oh, um, yeah, I'm in front of my computer'. Need I say anything more except I logged one of my longest support calls that day." **ETIC**



I ASKED THE USER TO CHECK IF THE CORD WAS PLUGGED INTO THE MACHINE – HE SAID IT WAS TOO DARK, BECAUSE OF THE BLACKOUT. . .

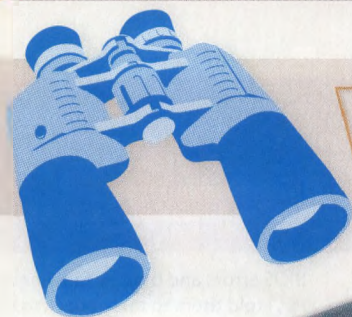
WINNERS!

This month's published readers win a Microsoft Wireless Laser Mouse 6000 worth \$129.95. Made for desktop PCs, it features Microsoft's high-definition laser technology with ultimate precision and smoother tracking and responsiveness (even on unique surfaces). This mouse includes a new magnifier tool and a tilt wheel, making navigating, viewing and editing easier. The Microsoft Wireless Laser Mouse 6000 delivers comfort and superior control to the desktop in a high-end style that will turn heads.



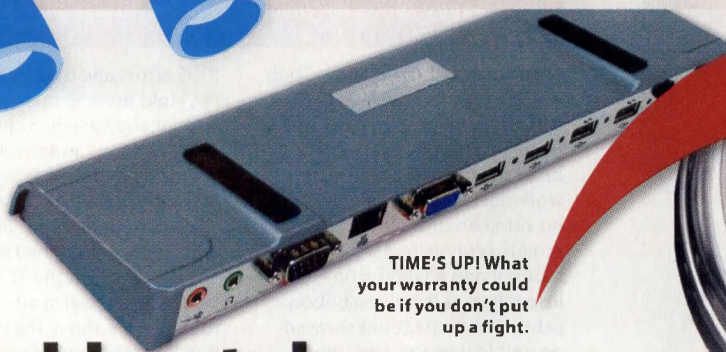
SEND US YOUR CONTRIBUTION AND WIN A PRIZE!

Send in your tales of woe involving dumb end users or incompetent techies to apcenduser@acpmagazines.com.au and if we print it, you'll win a prize. You must supply contact details in order for us to verify your contribution.



Watchdog

eyes on vendors



TIME'S UP! What your warranty could be if you don't put up a fight.



Docking tales

When a one-year warranty becomes a 90-day warranty, you know it's time to change stations. Watchdog investigates...

In late March 2006, we purchased over \$3,000 worth of Samsung equipment from our supplier. This consisted of a very expensive laptop, which was top of the range at the time, and also a compatible docking station which would extend functionality for the laptop.

The laptop and docking station worked fine for several months until one day in September, when the network connector on the back of the docking station failed to work.

The user of the docking station had us at tech support ensure the item was repaired whilst he was overseas on a business trip.

I contacted our supplier and had the docking station picked up, and was told that it would be repaired.

About two weeks later I was informed the docking station was fixed and it was returned to me.

Confident that the unit was repaired (as I had been given it back), I left it on the user's desk for him to use upon his return from his overseas trip.

The moment that the user returned and plugged the laptop into the docking station, he complained that the network port did not work.

It would appear that the docking station had not in fact been repaired at all.

I called Samsung to get the docking station repaired — this time properly. They informed me that the docking station was out of warranty and that they would not be repairing it.

I asked the reason for this, seeing as though not only had the warranty period not expired; it had not been repaired in the first place.

Samsung then informed me that the warranty was not your standard one-year, but only 90 days.

This warranty period does not seem in line with a product that costs over \$250, not to mention the fact that it does not seem to have been fixed in the first place (even when we originally sent it within the warranty period).

Dane Hawkins
North Sydney, NSW

Watchdog contacted Samsung and invited the company to investigate Dane's complaint and attempt to resolve it. We received the following reply:

Dear Watchdog,

Samsung proudly stands behind its products and service policies, and

we take all customer comments to heart. In regards to Mr Hawkins' case, we absolutely consider a docking station to be a part of the notebook and thus covered by the same warranty — in this case: one year.

The repair that was done to the docking station would have been under warranty for only 90 days, but the docking station itself is under a full one-year policy as an integral part of the notebook computer.

In this respect, Samsung has contacted Mr Hawkins to rectify the problem and we apologise for any confusion regarding our warranty policy. Our service delivery is benchmarked among the best in the industry, and we follow simple but standard procedures to resolve matters quickly, fairly and reasonably.

John Royle
National Sales Manager
Samsung Electronics Australia

We touched base with Dane in order to make sure that he was satisfied with the situation as it stood — however, Dane expressed

surprise, saying that he hadn't, as yet, heard anything from Samsung. We contacted Samsung once again and asked them to get a wriggle on with Dane's repairs.

A company spokesperson provided us with the following update: "The head of our IT service team left a message for this customer today. We just need to know exactly which docking station he had for his X60 notebook (there are two versions available). We will then provide a swap unit for the customer as a gesture of good will, rather than having a repair made on his unit (both units are in stock)."

Dane later confirmed that Samsung did in fact contact him and had stated they "would replace the docking station with a new unit. This is great news!". When he received the new unit he told us: "It seems to work fine... One thing of interest, however, is I also contacted the Office of Fair Trading and they didn't do anything... They just said if that was what was on the warranty conditions then that's all they have to do. They didn't care whether the warranty was long enough in the first place."

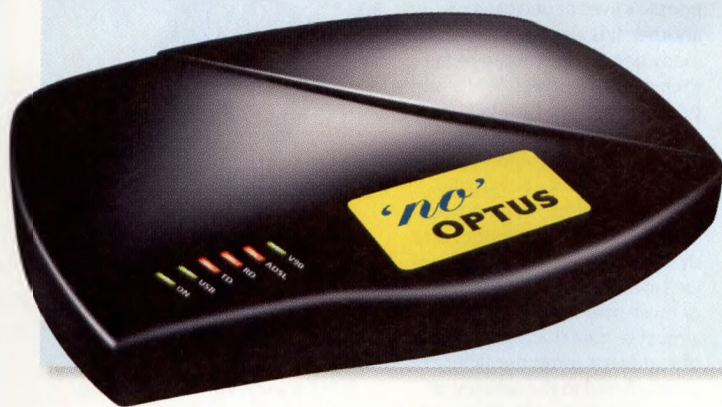


THIS WARRANTY DOES NOT SEEM IN LINE WITH A PRODUCT THAT COSTS OVER \$250, ESPECIALLY WHEN IT WASN'T FIXED IN THE FIRST PLACE!

MODEM OPERANDI

Januar Hartanto of Alexandria, NSW, thinks Optus is great, "but a pain in the a*** to get connected." He called the company in November 2006 in order to upgrade to their Optus Direct plan for cheaper home

phone line plans and faster broadband. The operator told Januar he would receive a modem by late December 2006, and it would take, as a maximum, two working days to transfer the account.



However, by 28 December, Januar's DSL connection was off without warning, and, the next day, the phone line was gone too. Januar called Optus, "but the staff didn't know what happened to my phone line or even to my DSL. A week and a few phone calls later (which kept me waiting on the line for 45 minutes or more every time!), my phone line was back. But my DSL was still off. To add icing to the cake, I just found out today that if I want to get a new modem, I have to pay \$90 because I'm not a new customer — even if I have a new 24-month contract with Optus which is costing me \$69.95 a month. But in every conversation I've had with them, I always ask about the modem — and they say the modem is

on the way. I've been using Optus for more than 10 years. What happened to your customer service, Optus?"

Watchdog contacted Optus to see if they could help Januar out. We were told: "Optus is working directly with Mr Haranto to resolve this issue as soon as possible. Optus apologises for this inconvenience to Mr Haranto." Eventually, Januar confirmed that Optus, in light of the misunderstanding, had offered him a free modem, but he decided not to take it as they were also offering three months' worth free connection to make up for the inconvenience, and he deemed that sufficient. "I think that is very good. I wish Optus customer service had the same quality as their products. . ."

SEEKING REDEMPTION

I was simply amazed when I found out, after buying my Vista-capable Toshiba Satellite A100, that I could get a virtually free upgrade to Windows Vista. I visited the upgrade redemption site (<https://upgradeweb.moduslink.com/vista/default.aspx>) and entered all my particulars on the first page — that I lived in Australia and wanted to view the web site in English. I went through and told the site that I had a Toshiba laptop and that I did not have a serialised upgrade redemption form. Once I passed that page I was faced with another form, but could not proceed. I was very disappointed because I was really looking forward to getting my copy of Vista as soon as possible. I tried the next day, but to no avail. I have kept at it for a month and a half — and they still have not fixed the web site after many emails complaining to them. I have been very annoyed that it has taken them so long, and I really want my copy — I don't see why it needs to take so long!

Philip Calder
Roseville, NSW

Watchdog contacted both Microsoft and Toshiba about Philip's concerns.

Microsoft deferred to Toshiba, stating: "As the OEM vendor managing the upgrade process to Vista for its clients, Toshiba's response to Mr Calder is more appropriate in this instance." Toshiba meanwhile, was "aware of the problem Mr Calder experienced" and offered the following reply:

Dear Watchdog.

Toshiba Australia has a strong commitment to customer service and we monitor the quality of its delivery regularly and rigorously. In keeping with this approach, we have investigated Mr Calder's claims.

Toshiba strongly urges that all customers clarify the terms of their purchases (including associated promotions) at point of sale and confirm pertinent information via www.isd.toshiba.com.au or 1800 021 100 / 13 30 70. We have a dedicated web site that details important information about the Vista program, but I would like to highlight a few points for your consideration:

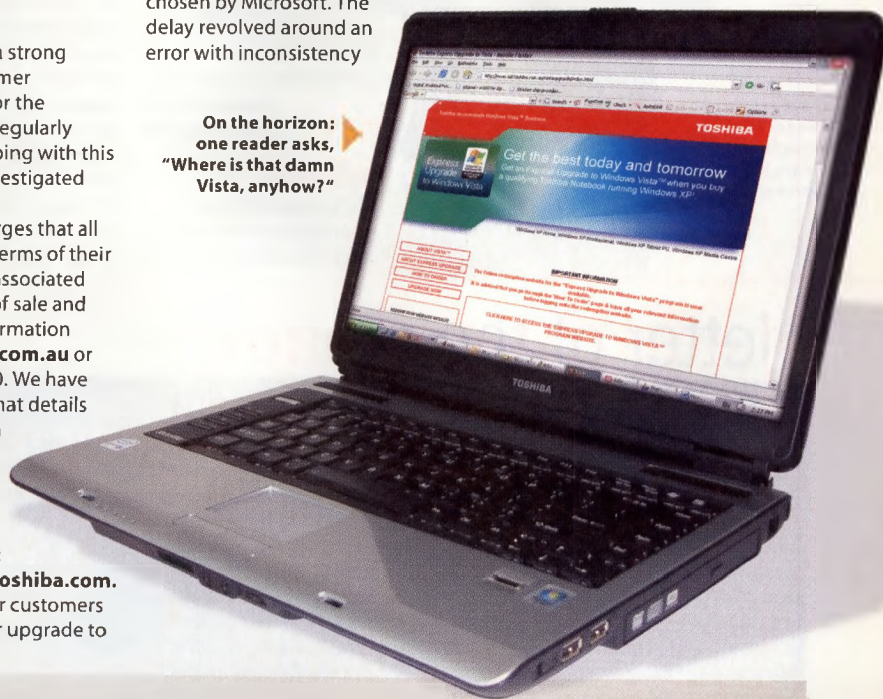
The site www.isd.toshiba.com.au/vistaupgrade is for customers to pre-register for their upgrade to

Vista. Microsoft will not ship any copies of Vista for this program until late February. Customers have until 30 March 2007 to register for their copy of Vista (upgrade). Toshiba (ANZ) had not published the link to register for the Vista Upgrade program due to a delay created by the fulfilment agency chosen by Microsoft. The delay revolved around an error with inconsistency

of data. We apologise for any inconvenience caused to Mr Calder through his inability to pre-register interest to participate in the Microsoft Vista upgrade program.

Kristie O'Dwyer
Public Relations Manager
Toshiba Australia

On the horizon:
one reader asks,
"Where is that damn
Vista, anyhow?"



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Epinions have your say!

I'M NOT A CRIMINAL!



Leave me alone!
One reader reminds
Microsoft that all
users are innocent
until proven guilty.

J'ACCUSE!

As a writer who depends (at least for part of my income) on royalties and payments for copying my work, I am generally in favour of Microsoft's anti-piracy campaign — that is, until they place their accusations into my home mailbox. Their recent cartoon strip to "Get Genuine" is fine when it is not addressed to me personally — as in newspapers and magazines — but I feel differently when it arrives as a mailing addressed to my home address. I have never had an illegal operating system, and I have more legal copies of MS programs than I have in use, but I will punish MS for this personal attack by delaying consideration of upgrading to Vista by at least a year. Can I suggest to others that a one-year strike on upgrading is a simple form of retribution for making their accusations personal — while having no evidence?

**Gordon Woolf
Hastings, Vic**

MURPHY'S PC

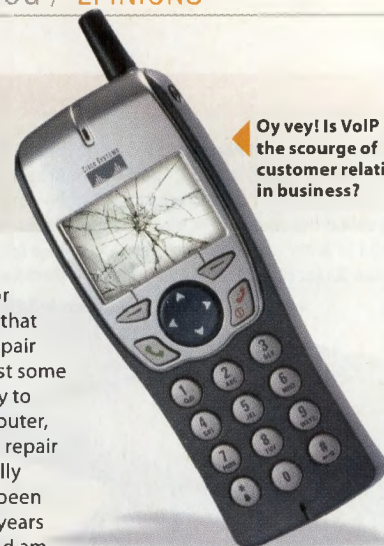
It is apparent that computer failure plays a significant role in many

people's lives at one time or another. It is also apparent that many people attempt to repair their own computers. Whilst some people may have the ability to repair or modify their computer, one might ask, "Would you repair the family car?" — an equally challenging device. I have been in the IT industry for more years than I care to remember and am well aware of the whimsical nature of these machines. However, it is almost certain that the probability of imminent computer failure is proportional to the amount of money, time and effort expended — and the absolute requirement for reliability!

**Nigel Quayle
Smithfield, Qld**

HELLO... ANYONE THERE?

Whoever the people are that are responsible for recommending to any company that implementing VoIP is a viable means for customers to contact a business should be shot. VoIP might be fine for home use or internal phone calls, but for front-line communications between a customer and a business, it just doesn't work. Having to call a company back because they can't hear you is unacceptable, and delays in conversation make



Oy vey! Is VoIP
the scourge of
customer relations
in business?

doing business unworkable. VoIP has its place, but not for the front line of a business. Just because VoIP is a big thing at the moment doesn't mean that it is workable in every situation. Cost is important, but it's not the most important thing when running a business. I would have thought customer relations came somewhere before saving a few bucks on telecommunications costs.

**Nathan Simpson
Clifton Springs, Vic**

DEUS EX MACHINA

In what I can only assume is a massive coincidence, on the very day that Windows Vista was released, my main computer running Windows XP began behaving very poorly. I make the assumption that it must be coincidence — not on a false

letter of the month

THINK GLOBAL, ACT LOCAL

These days, the computer and technology industry is rapidly changing, and it seems that only big names like Apple and Microsoft are able to keep ahead of the competition. The focus has changed: users now desire power and speed rather than the quality of the machine that they are purchasing/upgrading. With all these trends occurring, it is now no wonder that billion-dollar giants are ruling the market, pumping dollar after dollar into it to ensure that they rule the roost.

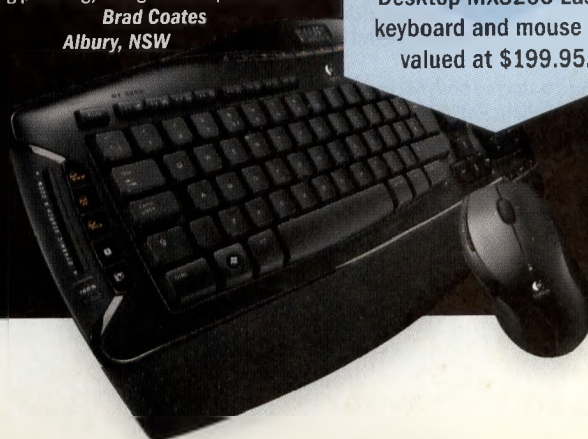
This leaves local vendors stuck in the dark when it comes to cutting-edge technology. Independent retailers are

diminishing, and users are being forced into the mainstream path of the corporate giants. Long gone are the days when there was a variety of sellers all offering machines that will perform for a quality price. There are still local vendors around, but most have adapted to selling brand-name PCs rather than ones built on a local site. With Apple's latest release — the iPhone — or MS' Windows Vista, one wonders whether we will ever see local products challenge brand-name PCs ever again? Realistically, there is not enough drive behind them to get off the ground at the moment. We need to see a "David and Goliath" situation, where more locals

are challenging the big manufacturers (and winning). This should allow users to be able to select from a range of quality products without a big name (or big price tag) being forced upon them.

**Brad Coates
Albury, NSW**

Brad wins this issue's
Letter of the Month prize,
a Logitech Cordless
Desktop MX3200 Laser
keyboard and mouse set
valued at \$199.95.



apc

EDITORIAL

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Gun control:
Robin from Qld
 thinks this image is
 too violent — what
 do you think?

belief that Microsoft wouldn't stoop to such a trick, but for the same reason that I rule out a virus attack: that it is almost impossible that my computer could have been up to date with the latest Vista release dates due to its lack of an internet connection. I have no plans to upgrade to Vista, but am left to try and figure out what exactly has gone wrong with my existing Windows install. Still, the "easy, convenient fix" was tempting... until I remembered it was Microsoft (what is simple and convenient now is just a pain in the neck waiting to happen — again). I'm currently moving to Linux, and as soon as I can get Sim City running properly, I'm there!

Andrew Cockroft
Bankstown, NSW

FILL 'ER UP!

I was reading Bob Barnes' letter in Epinions (APC March, page 33) asking about a "fuel gauge" for ADSL. I have been using NetMeter for quite a while now and find it very useful for gauging download limits and checking bandwidth while downloading. You set your monthly download limit and, when your monthly period begins, NetMeter will alert you if it calculates that you will exceed your download limit (and displays an alert). NetMeter is displayed as a small rectangular window on the desktop, showing total uploads and total downloads, or can be running hidden in the taskbar. Display settings can be changed to suit individual preference. This is the best and most accurate program I have found that will do this. NetMeter can be found at <http://readerror.gmxhome.de/>. I hope that APC

100% SATISFACTION
— GUARANTEED!

Wow: I am very impressed, and congratulations on putting your money where your mouth is with your own customer service. I bought the December and January issues of APC Magazine and found both cover DVDs faulty (what are the odds of that happening?), so I emailed APC, thinking maybe there had been a bad batch or there was a problem with production that needed checking. Imagine my surprise this morning when I found two DVDs in the letterbox replacing the faulty ones — and yes, they work fine. So, once again, thanks from this side of the ditch, and I look forward to future issues of a great magazine.

Terry O'Loan
Ngaruawahia, NZ

LOOKING
DOWN THE BARREL

Please give this a thought: how does the image of computers used in the home and the office look when it is associated with guns used in anger by tech support against end users?

The End User column has a photo of a supposed "tech support" person holding a gun in anger at some peoples' stupidity. I know: I work in IT support, both on the phone and in the field. So I really do understand. The thing that gets me is that I have a 10-year-old girl and a four-year-old

readers find this
 information to be useful.

Graeme Wilson
Maryborough, Qld

boy, and
 to try and teach
 them that guns are used for

retaliation or violence is not a good thing. The tech support guy is not getting attacked — just showing his lack of skills in communicating. Now don't get me wrong — I'm not an anti-gun campaigner. I grew up in the country and always had guns about, but we knew that this attitude was wrong.

This is a really bad look and the image of the magazine should be thought about. We are living in a world where there is already too much anger being vented through guns, war etc.

Robin Miller
Mackay, Qld

COLOUR ME BADD

Colour management seems to be a topic that never gets covered outside the specialist creative arts technology magazines, despite digital photography being such an important part of modern life. There has been no mention of Microsoft Vista's new colour management system, despite a few photography web sites and forums stating that it is different to the one in XP. Colour management also appears to be underdeveloped (excuse the pun) in Linux applications as well. Perhaps APC could do a review of colour calibration devices in the near future, and comment on their compatibility in Vista, Linux and Mac OS? It might also be worth writing a concise "colour matching for dummies" story, in order to help people be able to get their photos on the screen to look like what they would get from a print.

Kelvin Lau
Katoomba, NSW

epinions@acpmagazines.com.au

Come on, have your say! We want to hear what you think. Add to these discussions or email your views (in fewer than 250 words) to epinions@acpmagazines.com.au. All correspondence becomes the property of APC and is subject to editing. Letters must include writer's full name, street address, suburb, state and phone number to be considered for print publication and to be in the running for Letter of the Month prizes. Address and phone details will not be published.

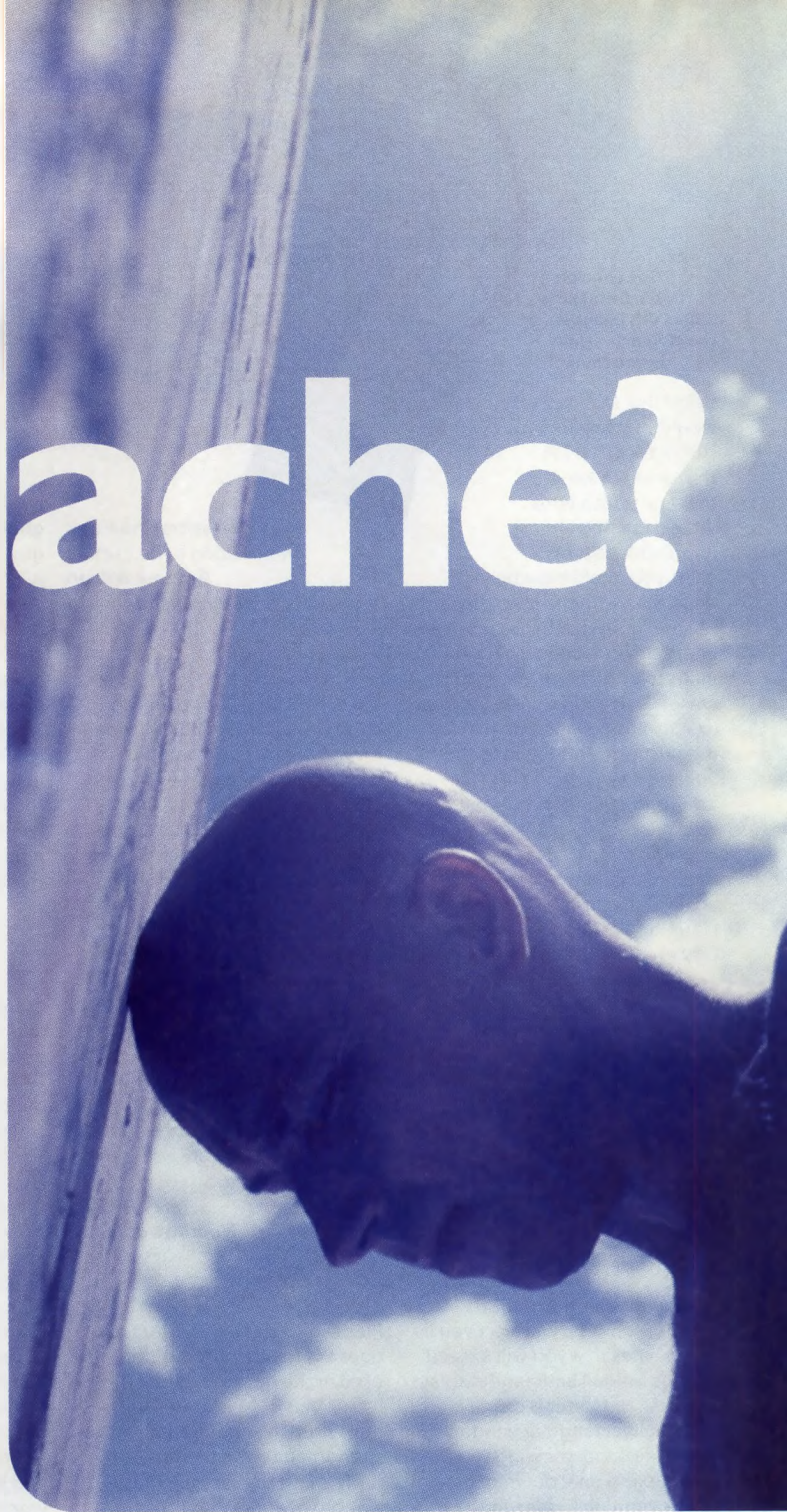
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This month in Labs...

A sight for sore eyes

Sometimes I think that I have the best job in the whole world (for a computer geek). I spend all my working hours talking with some of the smartest people in IT, "playing" with cool new technologies and travelling around and about to take part in various launches, talks and labs sessions. And don't get me wrong, because I'm not complaining, but sometimes it can be tough. Real tough.

Take this month's LCD Labs Challenge. For the first time, the overall quality of the products submitted for a comparative review has been extremely high across the board. Actually judging the minute differences between such quality products is extremely

difficult. When you've got a whole mess of gear, it's usually a task of deduction when picking out the best; after all, one PC or notebook is always faster or slower than another, one motherboard may have more slots and sockets than the rest — and software packages have different features that fit the criteria of our testing better than the competition.

This time, staring deeply into the LCD monitors — until my eyes were red and sore trying to pick which, or *if* any of the products were better than the others — was a long, trying process. In this case, where the specs of the products were mostly the same (or meaningless to compare) how can it be done? Choosing one over

the other based solely on appearance is silly — after all, my taste could be completely different to yours.

Benchmarking for displays in general is always a subjective thing; there's no benchmark application to say which is better or worse than another — it just takes many hours of using the products and a whole paper pad full of notes to make sure you get the right one.

When it's all said and done, I'm confident the award was given to the best monitor, but seriously, unless you lined them up side by side as we did, then any of them will do the job. Ultimately this is a win for you guys — it means the technology

for LCD panels has improved so much that us meagre humans are close to being unable to pick their faults. That means you can have some measure of confidence that the next LCD screen you buy won't disappoint. That's good for business, but most of all it's good for the consumer. [EJTB](#)



TECH HAS IMPROVED SO MUCH THAT US MEAGRE HUMANS ARE CLOSE TO BEING UNABLE TO PICK THEIR FAULTS

NICK RACE — TECHNICAL EDITOR




FIRST TEST

AMD vs INTEL

WHO'S REALLY FASTER?

Upgrading to dual-core? Our labs tests explode the myths about who really is faster and better bang for buck.

The Core 2 Duo processor, launched last year, has ignited an inferno underneath the CPU market. Processor pricing has been razed to the ground, and the latest chips are on fire in terms of performance per dollar. You can now get more for your money — whether you buy your CPU from Intel or its arch-rival AMD. Here's a great example: at launch, slightly more than 18 months ago, AMD's Athlon 64 X2 4600+ dual-core chip weighed in at around \$800. The same CPU can be bought today for under \$300. The 4600+ delivered great dual-

core performance back in 2005. And frankly, it handles just about anything most current desktop users are likely to hurl at it. Even by the heady standards of the PC industry, it's a staggering price drop.

Let's be clear about one thing though. A dual-core processor or better should be viewed as absolutely essential. Granted, not every application in the current PC ecosystem supports multi-core processors. But many already do, including image editing and media encoding software. And efficient multi-

threaded programs will become more widespread with time.

So, even if you don't experience a huge or immediate jump in single application performance when upgrading to a dual-core chip, the upside in terms of future-proofing and peace of mind is enormous. In any case, all software benefits from the huge boost in multi-tasking grunt that a dual-core chip delivers. All-round system responsiveness is the exclusive hallmark of a multi-core processor.

THE AGE OF OVERCLOCKING

Meanwhile, the practice of

processor overclocking is becoming ever more mainstream. For starters, both AMD and Intel have been shipping processors with failsafe thermal sensors for several years. Similarly, all major motherboard manufacturers now take overclocking extremely seriously and typically provide a wide range of BIOS options, even on budget boards. Even crusty, old Intel has embraced overclocking. It specifically created its Extreme Edition chips with unlocked CPU multipliers and maximum tweaking flexibility for enthusiasts. None of that would matter if the

ARE YOUR APPLICATIONS READY FOR THE AWESOME POWER OF QUAD?

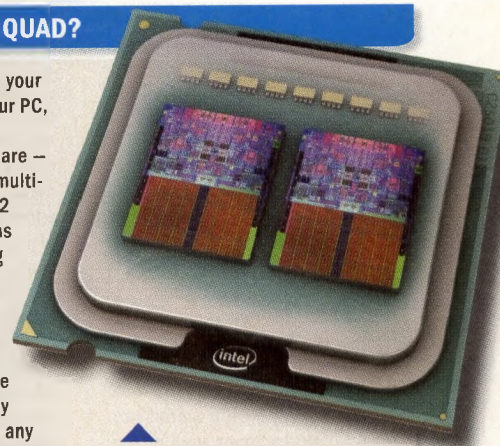
If the benefits of dual-core chips can be hard to fathom at times, the upside to the latest quad-core chips (or quad-core computing platform in the case of AMD's Quad FX) can be even trickier to grasp.

Single application support for more than two CPU cores is pretty poor right now. Many programs struggle to make use of more than one core and few can efficiently split work loads into more than two software threads. Even professional-level applications such as Adobe Photoshop compare relatively poorly when you add a second pair of processor cores. And of course,

games are currently a particular sore point for quad-core performance. There are a few existing titles that make effective use of two threads, but none as yet that can effectively weave four or more CPU-intensive threads.

However, quad-core computing is pushing forwards. Already, there are one or two applications capable of making good use of all that processing power, not least of which are video decoding and encoding. And as the years and months roll by, software developers will only get better at producing efficient multi-threaded code.

A quad-core chip could be your best bet of future-proofing your PC, and even today — despite its struggles with intensive software — quad-core rules supreme for multi-tasking duties. Only the Core 2 Quad Q6600, for instance, was capable of smoothly decoding our 1080p H.264 high-definition video file at the same time as compressing 1.5GB of data and encoding some DivX video content in the background. The lesson is very simple. You can chuck almost any work load at a quad-core chip and it will keep on going.



Whatever you throw at a quad-core, it won't break a sweat.

frequency adjustment headroom of today's processors was modest or inconsistent. But so refined and well-controlled have both AMD and Intel's production processes become, the speed ratings of current processors are almost entirely artificial. Take Intel's Core 2 Duo CPUs: the full family spans a huge operating frequency range from 1.86GHz to 2.93GHz. But when overclocked, all Core 2 Duos will top out between 3GHz and around 3.4GHz. In other words, when an entry-level \$300 Core 2 Duo can deliver almost the same end-user experience as that \$1,600 Extreme Edition chip, why pay more? This still factors in stability and reliability, so long as you steer clear of the more extreme, voltage-tweaked overclocking options available.

The Core 2 processor has drawn Intel and AMD much closer together in terms of CPU design philosophy. Both now focus on delivering more performance per



THE ATHLON 64 X2 IS LOOKING JUST A LITTLE RED-FACED AND OUT OF BREATH RIGHT NOW

processor cycle, rather than extracting extra oomph courtesy of sky-high clock speeds.

However, key differences remain. Notably, Intel has persevered with its rather dated and clunky discreet Northbridge chip — with shared CPU bus and off-chip memory controller — in contrast to AMD's more integrated and modular all-in-one processor design. The Athlon 64 X2 is looking just a little red-faced and out of breath right now. But fundamentally, it is the more elegant and modern architecture, and promises superior performance scaling as more cores are added. Look out, therefore, for an AMD resurgence as the industry begins to shift further to four- and eight-core designs.

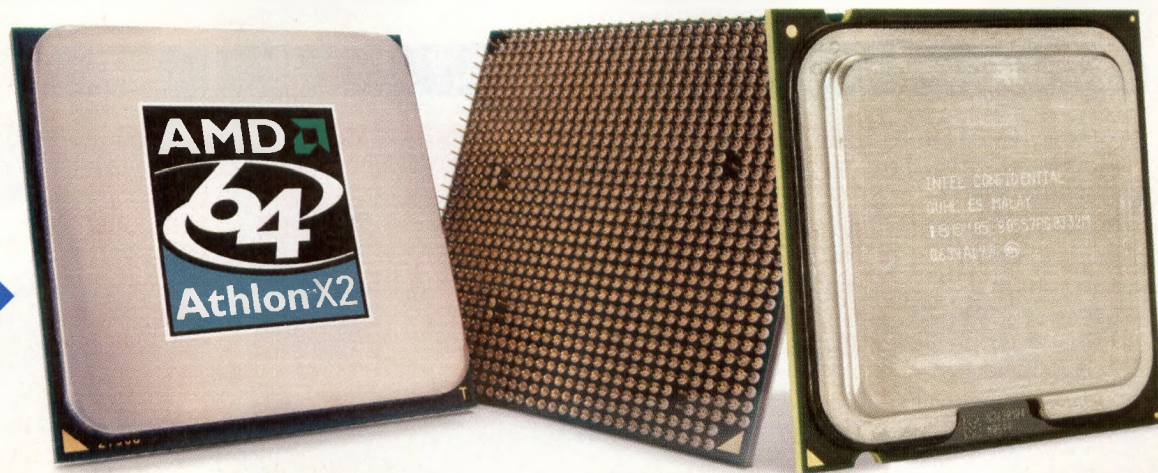
For now, the pure speed of the Core 2 execution core, as well as some of the more clever features — like its shared SmartCache — does an extremely effective job of masking Intel's platform shortcomings, such as limited CPU bus bandwidth.

The fact that Intel is a full node ahead of AMD in terms of process technology, having begun 65nm production early in 2006, certainly doesn't hurt either. It's allowed Intel to not only cram its chips full of cache memory, but also to be first out of the blocks with quad-core. AMD, by contrast, has only recently begun producing 65nm CPUs, and so far the new manufacturing process has yet to deliver any performance benefits. AMD's finest remain 90nm chips.

Yet, it's arguable how much impact these differences make. Broad functionality is remarkably similar, with both Core 2 and the latest Athlon 64 processors offering 64-bit data handling and support for both SSE3 multimedia instruction extensions and DDR2 memory, as well as software virtualisation and anti-viral measures such as Execute Disable Bit (known as NX Bit in AMD nomenclature).

Likewise, while differences exist in terms of power consumption (Intel has the edge), for your typical desktop usage scenario, the gap is insignificant. And thanks to the arrival of the new AM2 socket from AMD, there's probably little to choose between the two in terms of socket stability. Both AM2 and

The current crop of processors are a mix of 65 and 90nm technology.



AMD'S QUAD-CORE KILLER AND INTEL'S 45nm PLANS

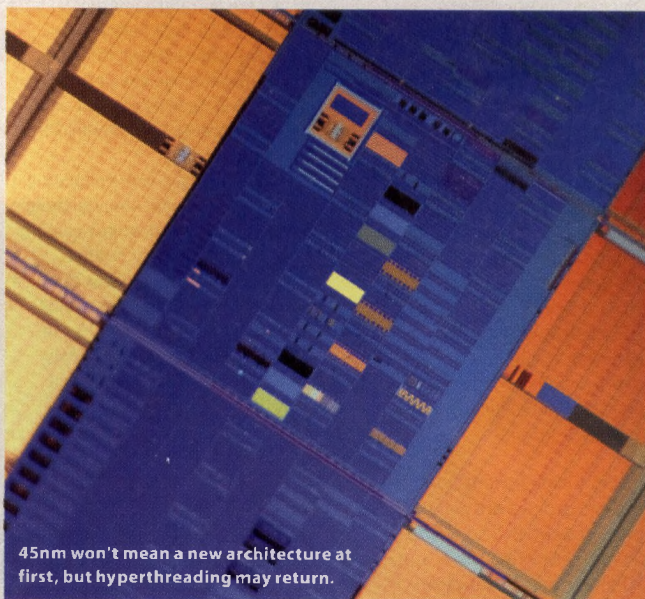
If 2006 was all about Intel's Core 2 CPU, the big news for 2007 will be the arrival of the first major revision to the Athlon 64 processor.

Due to appear first in servers and then on the desktop towards the end of the year, AMD's new chip will be the first true quad-core desktop CPU. Unlike the Core 2 Quad, which is made from a pair of dual-core dies glued together onto a single package, AMD's offering will boast a bona-fide quad-core die.

As well upping the overall core count, AMD has been working to improve the performance-per-clock of each individual core. Just like Core 2 Duo, for instance, AMD's new architecture can handle full 128-bit SSE instructions in a single cycle, a feature which is claimed to deliver an 80 per cent performance boost in some floating point work loads. Power consumption will improve,

courtesy of the new design's ability to switch off idle sections of the chip as well as independent frequency control of each core. What's more, AMD's superior memory bandwidth and latency could really begin to pay dividends in a quad-core configuration.

Promising though it sounds, however, AMD's new baby will have tough opposition. Intel recently demonstrated its upcoming 45nm die-shrink of the Core 2 processor. Although architectural improvements are expected to be limited to the introduction of SSE4 instructions (and possibly the reappearance of hyperthreading), Intel claims its 45nm process delivers massive reductions in current leakage (and hence, power consumption). Expect both higher operating frequencies and a few more megabytes of cache memory, to boot.



45nm won't mean a new architecture at first, but hyperthreading may return.

Intel's LGA775 will remain the mainstream desktop sockets for the foreseeable future. So quad-core availability aside, the differences between the two in terms of checkbox specifications are slight. Performance and pricing are what it's all about.

IMPOSSIBLE TO BEAT

Performance-wise, our benchmark results show that if money is no object, the Core 2 architecture is impossible to beat, despite the arrival of the new Athlon 64 X2 6000+. Making a pair of 3GHz Athlon 64 cores look ordinary is some trick.

As well as being unbeaten across the board, Intel's so-called NGMA (New Generation Micro Architecture) is adept at running 3D gaming and tasks heavy in SSE

instructions. The former is likely a function of Core 2's four-issue wide execution unit, which boosts performance per cycle for integer operations. The result is a huge gap in performance between the fastest Core 2 processor and the finest single-socket CPU AMD

in single cycle, where the Athlon 64 must break SSE operations into 64-bit pairs. It's the reason Core 2 makes light work of even the most CPU intensive video codecs. For building a system with Blu-ray or HD-DVD playback mind, Core 2 has to be your weapon of choice.

Finally, there's the minor matter of quad-core processor performance. For our full analysis, see the table above. But suffice to say, the Core 2 Quad Q6600's occasionally unimpressive benchmark numbers don't tell the full story.



WHEN OVERCLOCKED, ALL CORE 2 DUOS WILL TOP OUT BETWEEN 3 AND 3.4GHZ

produces. In the FPS F.E.A.R., for instance, Intel's Core 2 X6800 Extreme Edition racks up 190fps, while AMD's finest musters 140fps.

As for Core 2's awesome high-definition decode performance, thank its ability to handle full 128-bit SSE floating point instructions

Yet, it's not all bad news for AMD. Though the Athlon 64 can't compete in outright performance terms, it remains an extremely effective PC processor. Even the cheapest example on test this month, the 4600+, is a superb all-rounder.

VALUE FOR MONEY

At standard operating clockspeeds, it's tough to make a case for any of the more expensive processors AMD and Intel currently offer. Yes, the Extreme Edition chip is significantly faster than the entry-level Core 2 processors. But it's not even close to being five times faster, which is what it needs to be to justify the price premium. It's the same story for AMD CPUs. We doubt many users will notice the performance difference

MODEL	VIDEO ENCODE (MIN:SEC)	VIDEO DECODE (AV. CPU LOAD)	PHOTOSHOP TEST	F.E.A.R. (FPS)	OBLIVION (FPS)
	LOWEST SCORE IS BEST	LOWEST SCORE IS BEST	LOWEST SCORE IS BEST	HIGHEST SCORE IS BEST	HIGHEST SCORE IS BEST
AMD Athlon 64 X2 4600+	0:51	32%	186	107	59
AMD Athlon 64 X2 4800+	0:48	31%	182	111	61
AMD Athlon 64 X2 5000+	0:48	31%	178	115	63
AMD Athlon 64 X2 6000+	0:41	25%	151	141	72
Intel Core 2 Duo E4300	0:46	30%	180	102	54
Intel Core 2 Duo E6300	0:44	28%	177	107	57
Intel Core 2 Duo E6400	0:41	26%	157	129	63
Intel Core 2 Duo E6600	0:35	24%	141	154	68
Intel Core 2 Duo X6800	0:30	22%	125	190	76
Intel Core 2 Quad Q6600	0:30	13%	139	151	68

between the \$300 4600+ chip and the latest 6000+ processor, yours for slightly above \$700.

As ever, then, the best value lies towards the bottom of the range: the adage of buying a chip a rung or two up from the very cheapest makes as much sense as ever. Both the Core 2 Duo E6400 and the

Athlon 64 4600+ are extremely convincing, fit for tackling everything from high bit-rate H.264 decoding to professional-level image processing and value for money. Honourable mention goes to the new bargain basement E4300 Core 2 processor. Despite its cut-down 800MHz processor bus,

it remains a great little chip if you are on an extremely tight budget.

However, when you factor in their overclocking ability, things get really interesting. We don't want to overstate the importance of what these chips can achieve when overclocked. And we accept that for many, stability and

reliability are crucial concerns. But overclocking allows you to extract, from processors costing less than \$400, an end-user experience that's essentially equal to that of the most expensive processors on the market. There really has never been a better time to buy a PC processor. **ADC**

	AMD ATHLON 64 X2 4600+	AMD ATHLON 64 X2 4800+	AMD ATHLON 64 X2 5000+	AMD ATHLON 64 X2 6000+	INTEL CORE 2 DUO E4300	INTEL CORE 2 DUO E6300	INTEL CORE 2 DUO E6400	INTEL CORE 2 DUO E6600	INTEL CORE 2 DUO X6800	INTEL CORE 2 DUO Q6600
Price (@ 1,000 units)	US\$195	US\$217	US\$222	US\$464	US\$163	US\$183	US\$224	US\$316	US\$999	US\$851
Clocksperd / multiplier	2.4GHz/12	2.5GHz/12.5	2.6GHz/13	3.0GHz/15	1.8GHz/9	1.86GHz/7	2.13GHz/8	2.4GHz/9	2.66GHz/11	2.4GHz/9
Process tech	90nm SOI	65nm SOI	65nm SOI	90nm SOI	65nm strained	65nm strained	65nm strained	65nm strained	65nm strained	65nm silicon
Instruction pipeline	12/17 stages (int/fp)	12/17 stages (int/fp)	12/17 stages (int/fp)	12/17 stages (int/fp)	14 stages	14 stages	14 stages	14 stages	14 stages	14 stages
Power rating	89W	65W	65W	89W	65W	65W	65W	65W	80W	105W
Recomm. motherboard chipsets	NForce 590 & 680a, ATI Xpress 3200	NForce 590 & 680a, ATI Xpress 3200	NForce 590 & 680a, ATI Xpress 3200	NForce 590 & 680a, ATI Xpress 3200	Intel 965, 975, Nvidia 680i	Intel 965, 975, Nvidia 680i	Intel 965, 975, Nvidia 680i	Intel 965, 975, Nvidia 680i	Intel 965, 975, Nvidia 680i	Intel 965, 975, Nvidia 680i

MULTIPLE TASK PERFORMANCE RESULTS (L= LOWEST IS BEST, H= HIGHEST IS BEST)

Zip compress + video decode (min:sec)	4:05	4:01	3:55	3:23	4:51	4:43	4:01	3:45	3:21 (L)	3:49
Zip compress + video decode (av. CPU load)	74%	72%	71%	62%	73%	71%	66%	64%	59%	34% (L)
Zip compress + video encode (min:sec)	1:08	1:00	0:59	0:57	0:42	0:41	0:40	0:39	0:37	0:31 (L)

OVERCLOCKED PERFORMANCE RESULTS (L= LOWEST IS BEST, H= HIGHEST IS BEST)

Overclocked speed	2.9GHz	3GHz	3GHz	3.2GHz (H)	2.9GHz	2.9GHz	3GHz	3.15GHz	3.2GHz (H)	3.15GHz
Zip compress + video encode (min:sec)	1:00	1:00	0:59	0:57	0:42	0:41	0:40	0:39	0:37	0:31 (L)
Verdict	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆



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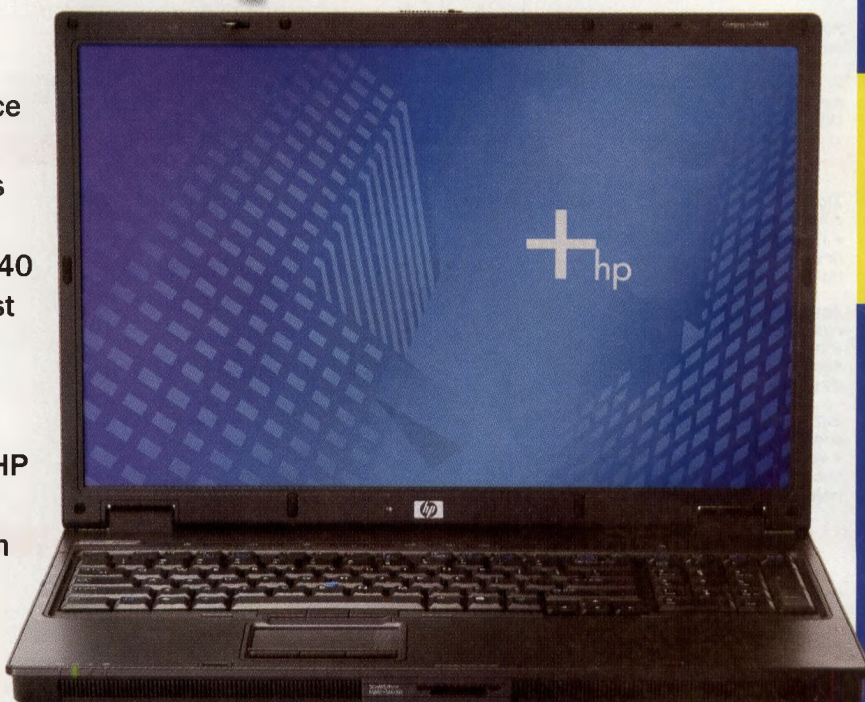


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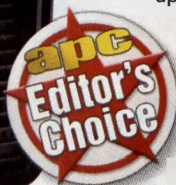
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Dell XPS 710

A powerhouse gaming system, with a price to match.



If you have \$7,000 to spend on a PC, this is the one to buy. Dell's XPS range is its premium brand of desktops and notebooks — and with that comes a premium price. The XPS 710 desktop is, by far, the fastest PC ever sent to the APC Labs — not the fastest PC run in the labs, mind, but the fastest you could buy "off the shelf".

The system delivered to us by Dell was specced up to be

impressive: running an Intel Core 2 Extreme QX6700 processor at 2.66GHz

• **CONTACT** Dell
• **ONLINE** www.dell.com.au/press
• **MARKET** Performance enthusiast
• **PRICE** \$7,477.80

with 8MB of L2 cache. Add to that 4GB of DDR2 667MHz memory, an Nvidia GeForce 8800GTX video card with 768MB of RAM and we're starting to get the picture. It's all squeezed on to an nForce 590 SLI motherboard, allowing an SLI dual-video card setup (with two 8800GTXs) if you're feeling particularly frisky. This XPS 710 was fitted with two 160GB WD 10,000rpm Raptor drives in a RAID 0 stripe plus two optical drives; a 16x DVD+-RW and a 16x DVD-ROM. For sound, the machine was fitted with a Creative X-Fi 7.1 card: a great choice for games and movies if you can fit in the speakers.

The case is monstrous, measuring in at 575 x 210 x 615mm.

✓ Fastest retail PC we've found.

• **VERDICT** ★★★★★

✗ Very big and very heavy.

It has a sleek look, designed to appear like it's zooming across your desk. The case has heaps of room internally, and a front-to-back air path you could drive a mini through, but the size and weight makes it almost immovable.

On the bench, the XPS 710 posted some very impressive results. PCMark scored the machine at 8,956, while 3DMark showed off the power of the 8800GTX with a score of 11,612. Now, you don't have to spec an XPS 710 this crazily, with a basic machine starting at a still-expensive \$3,599, but if you're in for a penny, in for a pound, then you can build a PC with atmospheric performance.

Nick Race

HP Touchsmart PC

This isn't the PC you're used to.

HP have decided to bring the PC into the home. Now, I'm not talking about that desktop sitting in the study for a bit of work or gaming; nor am I talking about the PC under your TV for media centre activities. This is different.

The TouchSmart PC is designed from the ground up to fill a new role in the tech-savvy home: to be used in high-traffic areas, like a kitchen bench or lounge room, where everyone can interact with it regularly. It's designed around a big, 19in touchscreen LCD monitor built on an all-in-one chassis sturdy enough to take a beating.

Under the hood the TouchSmart is no slouch. It runs an AMD Turion 64 X2 TL-52 with 2GB of RAM and a 320GB hard disk drive. It's got an Nvidia GeForce Go 7600 and built-in HD TV tuner. The design of the unit itself is outstanding: different enough to look good, and the amount of hardware packed in gives it a fighting chance at longevity.

Usability of the system is excellent. It's got a fast startup and a snappy sleep mode, front-mounted controls for most functions, including TV, as well as a shortcut button to the HP SmartCenter interface. This interface is the centre of the experience around this PC letting the user quickly access functionality like the calendars, notes, photos and media. Though you can add shortcuts to applications on this home screen, currently there's no third party integration allowed.

HP envision the TouchSmart as a tool to organise the family, including scheduling with calendars for each family member and a noticeboard to tie in with it, along with photo display, printing and manipulation, media centre

functionality for music and film and more.

What it really is, beyond a strange-looking PC, is the embodiment of an idea in which a PC can be more useful to a family beyond an entertainment device. In execution, the extra functionality boils down to a very expensive pack of post-it notes, until HP allow third parties to write more (and more useful) software for the platform.

Nick Race



• **CONTACT** HP
• **ONLINE** www.hp.com.au
• **MARKET** Everyone
• **PRICE** \$3,699

✓ Great hardware platform and idea.

• **VERDICT** ★★★★★

✗ It could be so much more.

MSI K9AGM2

It's got the AMD 690G chipset, but will it beat other integrated solutions?

Last year's news of the merger between AMD and ATI invoked many questions from the industry. What new products would it bring? When would consumers see the benefit, and — somewhat crucially — would it be enough to take on the combined might of industry leaders Intel and Nvidia? With the AMD 690G chipset, formerly known as RS690, we have the first co-operative endeavour between the companies to see release, and AMD is finally coughing up a few answers to those questions. It hasn't regurgitated any surprises, though. This is a motherboard and integrated graphics chip, and the performance is bog-standard by default. This is the new standard for integrated graphics, so how can it be anything but?

The history of integrated graphics has previously been dogged by very poor benchmark results. Offloading the traditional functions of a standalone GPU onto the motherboard itself meant many corners were cut, such as sharing system memory with the GPU, and therefore running 3D titles or multimedia on an integrated setup was often excruciatingly choppy. Intel has upped its game since, with better performance from its integrated X3000 chip than previous offerings. Nvidia is also a serious contender, with chipsets featuring its GeForce 6150. However, there's still a canyon-like gap in performance between a discrete CPU/GPU and an integrated chipset, which the 690G manages to fill. This is in part thanks to the fact that the integrated Radeon

• **CONTACT** MSI Australia
 • **ONLINE** www.msicomputer.com.au
 • **MARKET** Performance enthusiast
 • **PRICE** \$129 (\$149 with HDMI)

X1250 — a chipset version of the old Radeon X700 — offers four pipelines, a feature that neither Intel nor Nvidia manage with their own offerings.

Even given its status as perhaps the most heavyweight onboard graphics solution on the market, the X1250 integrated into the K9AGM2 is unlikely to force gaming addicts to throw away their GeForce 8800s en masse. With a passable 3DMark05 score hovering around 1,750 after various tests, it's about as underwhelming as new 3D releases get. It benefits from DirectX 9 support and we're always grateful for Shader Model 2.0 compatibility, but any serious gamers will be disgusted at this ageing specification. Forget about the power onboard; you'll be fine if you want to run a three year-old game, but if you're focused on anything newer, you'll want to fill the single PCI Express x16 slot with a graphics card with some guts.

BUILT FOR MULTIMEDIA

While it can certainly push a few polygons, this isn't a gaming chipset in the current bloom-heavy HDR sense. Instead, chipsets like this —

✓ ATI 690G chipset.

• **VERDICT** ★★★★★

✗ 1x PCI-E x16; 2x RAM slots.

especially if they're set into a Micro-ATX motherboard — are perfect for media centres, secondary PCs or uniquely styled cases. The X1250's hardware decoding of HD video in both H.264 and VC-1 formats means playback of Blu-ray or HD DVD titles should be accelerated and take a load off the poor CPU. Keep adding these parts together and we end up with capable and cheaper media centres, able to run perfectly without the fastest processor or standalone graphics card, and that can't be a bad thing.

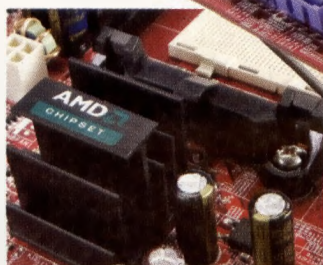
So the AMD 690G has appeal, certainly. But its chipset is very limited. Build it into a bigger board, for example, and you'll just be asking for people to wonder why their empty, unloved PCI Express slots (or their slightly too expensive onboard graphics) aren't being used. The single x1 and x16 slots provided on MSI's board are more than enough to house a TV tuner, so why cram in more? It's all about fixing your vision on the right point in the

horizon. Right now, MSI has picked its spot well.

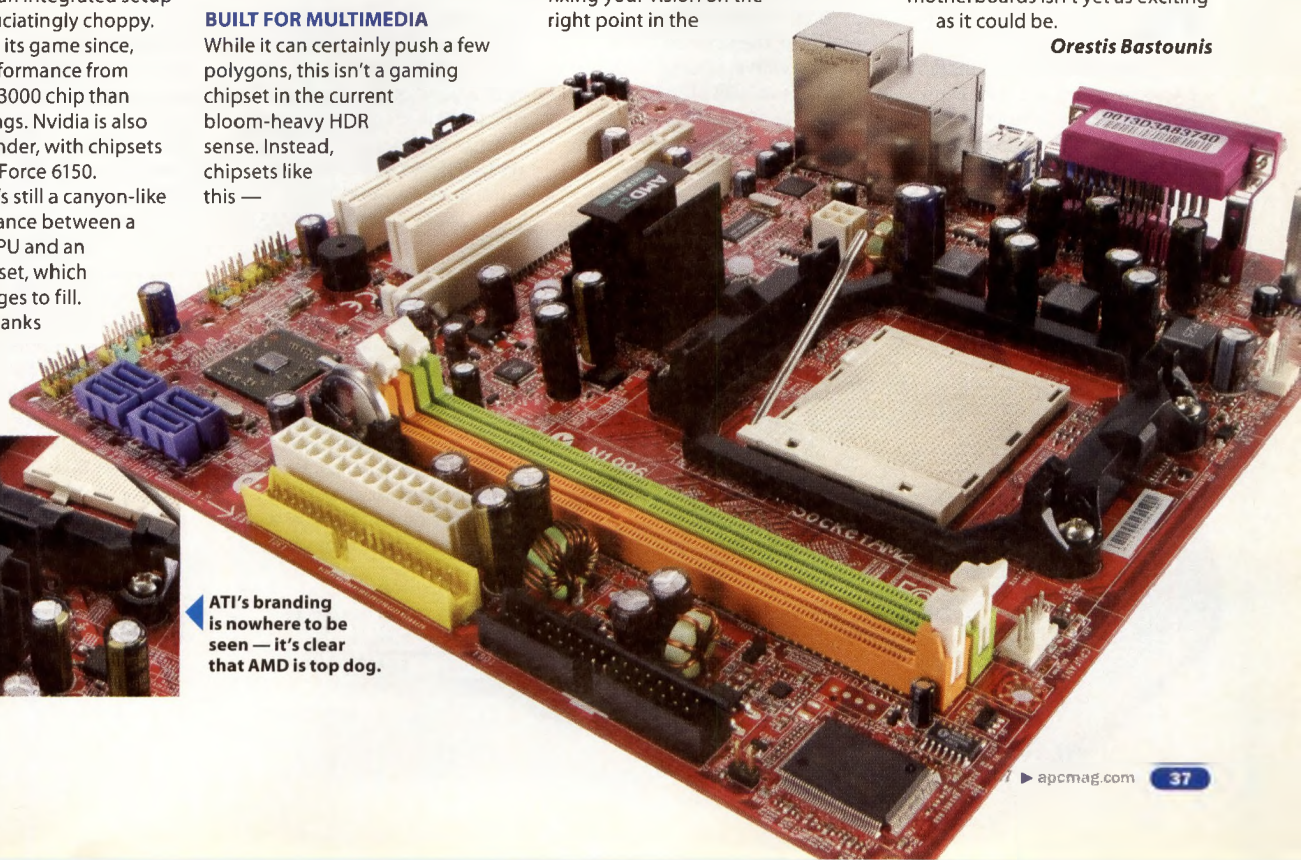
This is a specialist chipset, not an astounding computing development. We implore AMD-ATI to stay on this path, to develop faster chipsets to suit every motherboard and to avoid putting its chipsets where they're not wanted. That said, we would have preferred this as part of a motherboard sporting HDMI out, and — honestly — with an Intel socket. While that's increasingly unlikely to happen, it can't be ruled out.

The fact is that this long-awaited first glimpse of what happens when the world's second largest processor company merges with the second largest GPU manufacturer is just a stop-gap. There are many similar boards you can put in a media centre, and the AMD 690G chipset isn't any more advanced. We wanted to be blown away by an AMD/ATI product, but after playing with this, we're still waiting to be impressed. The forthcoming Fusion may well tell a different story, but better integrated graphics on motherboards isn't yet as exciting as it could be.

Orestis Bastounis



ATI's branding is nowhere to be seen — it's clear that AMD is top dog.



Gizmo Project 3.0

Like Skype, but without the supernode risk.

Almost everybody has heard of Skype, but Gizmo Project is not so well known. That's surprising, as it offers similar facilities, including free calls to other users, but is standards-based and does not present the risk of your internet connection being press-ganged into carrying other users' traffic. It can be used as a softphone for Asterisk and other SIP-based phone systems.

Version 3.0 is initially only available for Windows, but implementations for Mac OS X, Linux and certain Nokia devices are planned.

New features include: voice calling to Yahoo! Messenger, Windows Live and Google Talk users; file transfers between Gizmo

Project and other Jabber-compatible clients; IM chat history; IM group chats; and, custom avatars. We successfully conducted voice calls to Windows Live and IM sessions to Google Talk.

One problem with Gizmo Project is that the client takes 20 seconds or more to connect to SIPphone's servers. That doesn't sound long, and it only happens when you start the program, but it is irritating. Skype connects in about half that time.

When calling regular phone numbers, Gizmo Talk rates are very reasonable: for example, US\$0.019 to the US, US\$0.02 to Australia and the UK, and just US\$0.017 to China. Calling mobiles in some countries is more expensive (eg US\$0.193 to

Australia), but probably still cheaper than your normal carrier. You receive US\$0.25 credit when you establish your Gizmo Project account, so you can check the call quality for yourself — we think it's fine.

The "all calls free" facility means you can place free calls to your contacts' regular phones (fixed lines only in over 40 countries including Australia, fixed and mobile in 17 more), providing they add their numbers to their profiles (and both parties make "a few" Gizmo Project calls each week).

Dial-in numbers are available in 28 countries, including Australia for US\$35 per year.

If you only want to make outgoing calls (to regular phones, Gizmo Project or Google Talk), give SIPphone's GizmoCall web-based service a try (www.gizmocall.com).



CONTACT SIPphone
ONLINE www.gizmoproject.com
MARKET Everyone
PRICE Free

✓ Standards-based VoIP and IM.

VERDICT ★★★★★

✗ Limited IM compatibility.

This requires the installation of a Flash-based plug-in, but once that's done you'll be able to make a limited number of free calls each day. Additional time can be purchased at similar rates to those for Gizmo Project.

Stephen Withers

Acer Aspire 9425WSMi

It's big, fast and Vista from the ground up.

Acer advertises the Aspire 9425WSMi on its web site as a "powerhouse entertainer". It's not far wrong: a Core 2 Duo-based notebook with a clear, bright screen, plenty under the hood and surprisingly decent battery life.

Built around the Intel 945PM platform, the Aspire 9425 is packed with a 2.0GHz T7200 Core 2 Duo, 2GB of DDR2 and an Nvidia nForce Go 7300 (using 236MB TurboCache in lieu of discrete graphics memory).

The GeForce 7300 drives a 17in wide-screen LCD with a native resolution of 1,440 x 900, with a good quality "Crystalbrite" gloss finish. It's got a comfortable full-size keyboard with number pad, webcam and DVD Super Multi drive to round it out.

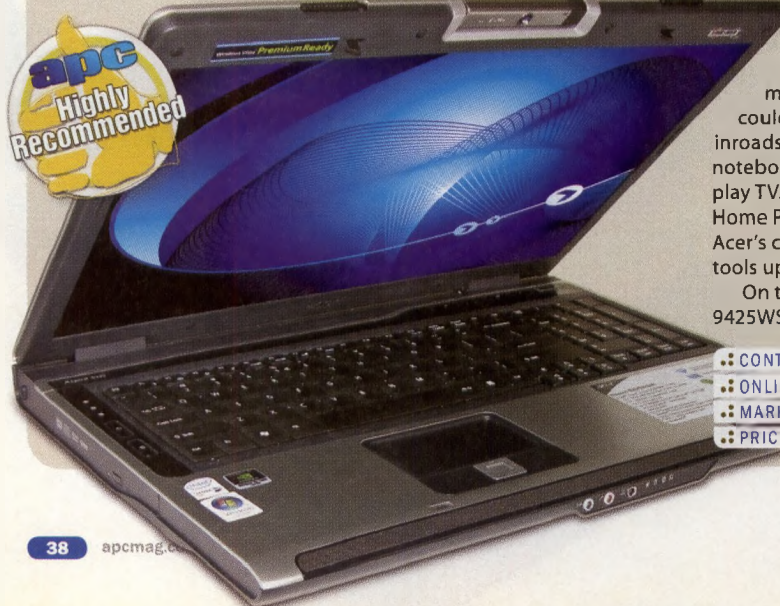
The Aspire 9425 is an entertainment or desktop replacement notebook, except it's missing a TV tuner. The unit could make some serious inroads into the media centre notebook pile, if it could actually play TV. It's bundled with Vista Home Premium, with all of Acer's custom and included tools updated for the new OS.

On the bench, the Acer Aspire 9425WSMi scored some decent

results from our standard benchmarks. 3DMark06 clocked the Nvidia 7300 Go at 629, which is enough for Vista, while PCMark awarded 3,993 points from the strength of the CPU and RAM. BatteryMark gave the 9425 just over three hours, which isn't too bad for this type of notebook.

Out of the box, it's a neat package. It's a fast notebook, capable of playing the odd game, getting some work done with comfort and connectivity, and with a USB TV tuner makes a darn good MCE unit as well. If you're looking for a desktop replacement that's a pleasure to use, with plenty of grunt, then you could do much worse than the Aspire 9425 WSMi.

Nick Race



CONTACT Acer
ONLINE www.acer.com.au
MARKET Everyone
PRICE \$2,699

✓ Nice 17in wide-screen; power.

VERDICT ★★★★★

✗ Tuner would be nice.

Azureus 2.5.0.4

A powerful and comprehensive BitTorrent

Azureus is a popular, cross-platform, Java-based BitTorrent client. It has a number of useful features, including: UPnP and NAT port mapping, proxy support, super-seeding, peer exchange, selective downloading and prioritisation. Azureus makes use of DHT (Distributed Hash Table), which permits trackless decentralised torrents (but it's not compatible with the official BitTorrent DHT).

One impressive aspect of Azureus is its configurability. The user can set upload and download speeds, the number of seed connection and upload slots, move data and torrent files around, rename and assign downloads to categories. The amount of various connection, transfer, file, interface and trackers options are just mind-boggling.

The interface is clean and intuitive. The user can double-click on a torrent to view general, peer

and swarm information, review settings — or right-click to pause, queue, check consistency or remove the whole download. It may take a bit of time to learn everything that Azureus has to offer, but it is worth the effort. For beginners, Azureus features a configuration wizard which walks through most important options.

Azureus supports the somewhat controversial BitTorrent encryption protocol in the form of Message Stream Encryption (MSE) and Protocol Encryption (PE), which makes BitTorrent traffic harder to detect. It is used to get around traffic throttling, though it is hard to say how effective it is. If you are worried about your privacy, Azureus supports I2P and Tor. These are anonymous

communication protocols that keep your IP secret. The user can select whether to download from a public network and/or anonymous networks.

Another cool aspect of Azureus is its plug-in system. There are plug-ins (http://azureus.sourceforge.net/plugin_list.php) for extending automation, providing more information and enhancing user-friendliness and

enabling remote access. One plug-in, for example, lets the user look at the peer swarm in 3D. Another adds an RSS Feed Scanner for automated downloads of torrents.

We wouldn't hesitate to give Azureus a higher score if not for one problem: its memory — and sometimes CPU — consumption is too high. It's better than what it used to be, but is still high enough for us to note it. Otherwise, it is an excellent program which deserves commendation.

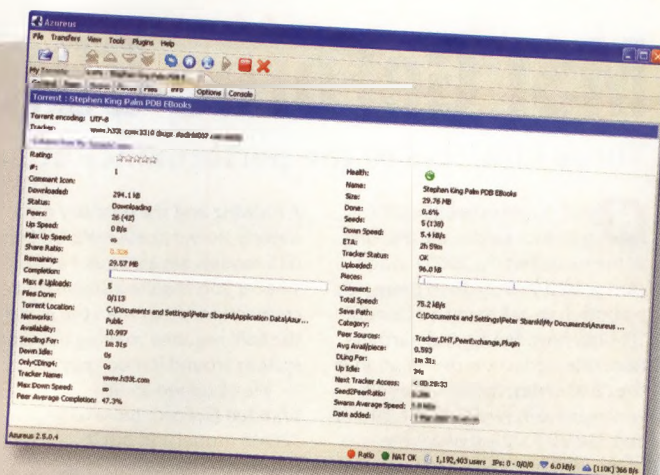
Peter Sbarski

CONTACT	Azureus
ONLINE	http://azureus.sourceforge.net/
MARKET	Everyone
PRICE	Free

✓ Good features, interface & plug-ins.

★ VERDICT ★★★★★

✗ Needs Java; memory consumption.



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MSI GeForce 8800 GTS 320MB

Three quarters of the performance at half the price.

Nvidia's GeForce 8800 GTX graphics card is still the king of the heap, but if a \$900+ video card scared you off, then there was no option to get ready for DirectX 10. Until now. Nvidia and partners have released a new designation in the 8800 series, the GTS models, which come in two flavours, 640MB and 320MB (cutting down the cost of the 768MB GTX by a big margin).

There is a pretty big difference between the GTX and the GTS models on paper, but performance is still rock-solid. The GTS sports 96 "stream processors" (cores) to the GTX's 128, and the memory interface for the GTS is cut to 320bit from the GTX's 384bit. To maintain a further difference, the GTS' core is clocked lower at 500MHz, shader clocks at

1,200MHz and the memory runs slightly slower at 800MHz. Still, the GTS models are also quite a bit smaller and require a single power connection rather than the two that the GTX requires, making building a system around it much easier.

We obtained an MSI-branded GeForce 8800 GTS 320MB model and put it through its paces.

We tested on a Gigabyte 965 board with a quad-core Intel Core 2 Extreme QX6700, 2GB of Corsair RAM under Windows Vista. The GTS scored a very respectable 6,408 points in 3DMark06.

With some gaming under its belt, the 8800 GTS is realistically the better pick from the two. Though DirectX 10 (and theoretical future compatibility) is nice to have, how it performs is the main concern. Testing in F.E.A.R., Quake 4 and Supreme Commander had the card singing, the GTS 320MB

version never slowed or juddered, even with a system-killing 16xAA turned on. At a not insignificantly cheaper price, it's now hard to justify the 8800 GTX over the GTS versions, especially considering the current "state of play" in the gaming market.

Nick Race

CONTACT MSI

ONLINE www.msicomputer.com.au

MARKET Performance enthusiast

PRICE \$479

✓ Small; top performance; cheap.

VERDICT ★★★★★

✗ Less long-term legs than the GTX?



Canon HV10

High-definition video in a pocket-sized format.

The Canon HV10 is a good little number, but do its HDV images keep up with its bigger competition? It's a very small digital video camera, but it shoots pictures that look their best on a very large flat-screen TV.

In camera, the images look good. It does take a little getting used to this upright palm-style form factor after regular use of more typical barrel-type bodies. Things feel a little more awkward,

you do worry that you are moving too much to get good images. Hallelujah for optical stabilisation! It does an excellent job in this camera so you can shoot with confidence, even at full reach of the 10x zoom lens.

The strength of the HV10 comes through a combination of the stabilisation and a true 1,920 x 1,080 CMOS sensor. CMOS is really picking up a lot of ground as the sensor of choice for HDV, especially in these smaller cameras where CMOS can resolve more subtle tones when scaled down to smaller sizes (CCDs struggle to capture maximum light as they move down into small form factors).

I should note here that final HDV is captured in 1,440 x 1,080 (with wide pixels pushing the

image out to 16:9), but the detail visible in the captured footage definitely compares favourably with other consumer HDV cameras. As usual in consumer camcorders, there are photo features here too, and good auto-focus assistance.

One big nuisance of the form factor is the way tapes are loaded — it takes more than a moment to swap in and out, so be careful shooting anything important if you are near the end of a tape. Better to lose a few minutes of tape than a few minutes of important action being lost.

For anyone after a true pocket video camera that will shoot HDV (did anyone expect to get that soon?), this will not disappoint.

Seamus Byrne



CONTACT Canon Australia

ONLINE www.canon.com.au

MARKET Everyone

PRICE \$2,299

✓ Super compact; image quality.

VERDICT ★★★★★

✗ Too small; difficult tape change.



Freedom9 freeStor 4020 NAS

Bare-bones NAS at a reasonable price.

Freedom9 isn't a well-known brand in Australia, but its network and KVM products have been increasing in popularity overseas for some time. As an entry into Oz, Freedom9 has gone with its bare-bones backup NAS, the freeStor 4020, and it's a good choice.

The freeStor 4020 is a four-bay, network attached storage device. It supports SATA drives up to 750GB and software RAID 0, 1, 5 and 1+0. It includes an integrated file server with system backup and recovery and is integrated tightly with the included backup software DiskSafe Express (DSE).

APC tested the device by connecting it to our Gigabit network via its built-in port and running continuous NetBench tests on the device until its capacity was flooded. In RAID 5, the system kept

CONTACT Tdata
ONLINE www.tdata.com.au
MARKET Everyone
PRICE \$1,199 with DiskSafe Express

✓ Good included backup software.

VERDICT ★★★★★

✗ No Vista support.

up to 130MB/s IO from four clients, which is quite respectable for a low cost device.

The included DSE backup software can provide system-level or data-level backup for Windows 2000, XP and Mac OS X, but at this time there's no listed support for Vista systems. DSE allows full system recovery from the 4020 in case of complete failure.

Our tests had the unit restored from scratch in a 90-minute period running with Windows XP, which isn't terribly quick, but still much faster than rebuilding an SOE from scratch.

For the home user, the Freedom9 freeStor 4020 comes in to its own. Though there's no specific media-serving capability, the device is eminently suitable for

storing media for serving across a home network, and perfect for backing up PCs at the same time. The relatively cheap price for this bare-bones system is pretty good, considering you can start small and increase the storage as required. All in all, the software's good, the performance good and it backs up fine — all at the right price.

Nick Race



THE RELATIVELY CHEAP PRICE FOR THIS SYSTEM IS PRETTY GOOD, CONSIDERING YOU CAN START SMALL AND INCREASE THE STORAGE LATER

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CISCO



Billion BiGuard S10

A simple way to enjoy VPN power.

Teleworking in the 21st century means having instant access not only to your office email anywhere you go, but also to internal network resources, such as LDAP, FTP and file shares. Inevitably this means setting up a virtual private network (VPN), which is the bane of any administrator. But a new breed of VPNs run SSL encryption over a standard internet connection, bringing VPN power to anyone with a web browser. This Billion VPN is a great example of the new technology wave: it's a tiny fraction of the normal VPN price, it requires almost no setup and it does indeed work with Firefox, Internet Explorer, Opera and Safari. You can just plug it in and it should work straight away.

Configuration of the unit is done entirely through your web browser; plugging your PC into one of the four LAN ports gives you privileged access to the device. From there you can configure it, add users and define what connections are available. It's all in one place, it's all very easy to find and use, and it all works first time.

But — and there's always a "but" when something is cheap and good — to get the most from the Billion VPN you need to be using IE. What's more, you need to install an ActiveX control on your browser, which rules out its use from internet cafes and any other machine you don't have administrator access to. The missing part is the network

extender, which uses a virtual network device to give you an IP address on the remote network. With this enabled, you can leave IE running in the background but then use the rest of your computer as if you were physically connected at your workplace. As soon as IE terminates, the connection closes, so it's all very secure. Internet Explorer requirements aside, our only real niggle is the lack of a proper SSL certificate — both IE and Firefox bring up multiple security warnings

because the certificate isn't correct.

These two flaws disappear when you take into account the sub-\$800 price: perfect for small businesses or enthusiastic home users. Yes, it does limit you to 10 simultaneous connections, but if you ever need to upgrade, there's always the BiGuard S20, which allows twice as many.

Paul Hudson

• **CONTACT** PC Range
• **ONLINE** www.billion.com.au
• **MARKET** SMB
• **PRICE** \$779

✓ Web-based GUI.
• **VERDICT** ★★★★★
✗ ActiveX control.



Tarantula Keyboard & Habu Mouse

A razor-sharp combo for the gaming elite.

Razer is not an unknown brand when it comes to premium gaming peripherals. With its first high-sensitivity ball mouse, the Boomslang, Razer quickly established itself as a manufacturer of gear that every gamer wants.

Its collection of mice has since grown, with outstanding takeup of aggressive herpetological names like DeathAdder, Copperhead, Diamondback and Krait. The newest of these mice, the DeathAdder, uses an IR sensor with 1,800dpi sensitivity, polled

• **CONTACT** Altech
• **ONLINE** www.altech.com.au
• **MARKET** Performance enthusiast
• **PRICE** Tarantula \$179/Habu \$129

✓ Comfortable, responsive and slick.
• **VERDICT** ★★★★★
✗ Expensive!

every 1ms. If it moves, your PC knows about it.

Beyond the mice, Razer has moved in to audio with a range of headphones and speakers and keyboards, specifically for gamers. The first board is the Tarantula, a fully programmable, hyper-responsive monolith for desktop gamers. The board includes 32KB of onboard memory (for macroing), remapping of any

key on the board and comes packaged with a selection of game-related key caps, for added street cred. Using the keyboard for gaming is a dream, it's ultra-snappy and comfortable, while the customisation software is a cinch to use.

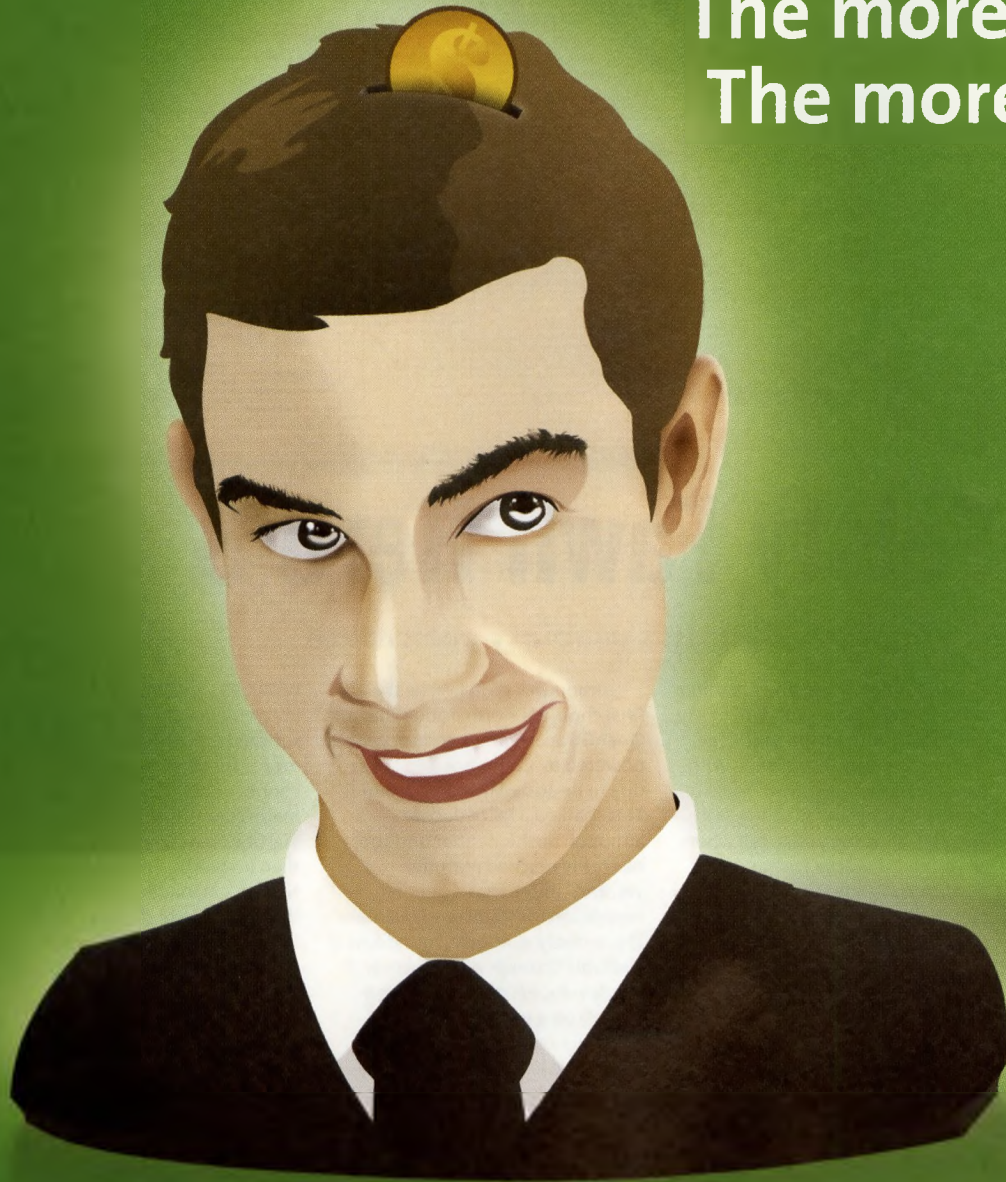
Unlike Razer, I feel Microsoft's mice have been declining in quality since the first-gen Intellimouse. They get

bigger, bulkier and looser every generation... until now. Gaming peripherals are a decently sized and premium-priced market and MS wants a piece. Microsoft Hardware has licensed the Razer "Precision" engine for inclusion in its new gaming mouse, the Habu. The Habu allows for the physical customisation of the side buttons from the front to back. The Habu also advertises itself as 2,000dpi, slightly higher than the DeathAdder, but to use them side by side, there's little difference.

What sticks, is that the Habu feels like a much more usable mouse than the DeathAdder, as it has a little more weight, but is just as responsive and comfortable. Combining a Tarantula and Habu is bound to see you pawning more nubs in short order.

Nick Race





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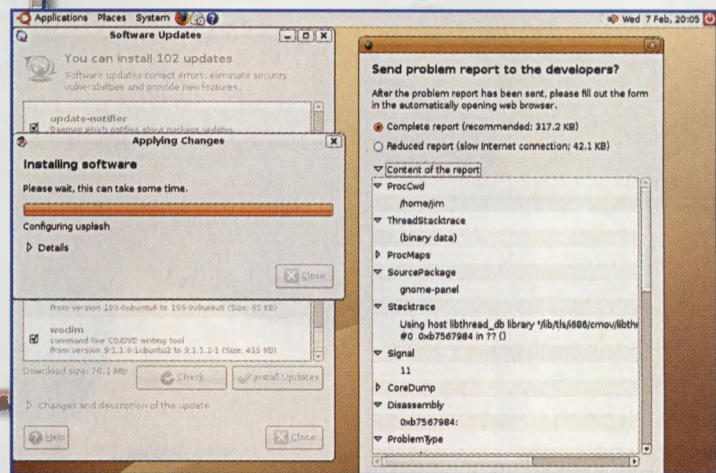
seeklearning.com.au



PREVIEW

Gone are the days of system control via unwieldy menus.

Expect to see plenty of this kind of behaviour if you install a Feisty preview. Help out — send the report!



Ubuntu Feisty Fawn Herd 3

Feisty Fawn promises to improve Ubuntu's usability even more.

Ubuntu is something of an open source success story. It has become a favoured choice of desktop distribution, having ranked top of distrowatch.com for over a year. No mean feat considering its comparatively short two or so years of existence. The latest download is Herd 3 for Ubuntu 7.04 — dubbed the Feisty Fawn — which is scheduled for release at the end of April.

Ubuntu is based — many generations ago — on the Debian platform, and includes many of its features. The difference is that the developer (Canonical) releases stable versions every six months, in contrast to Debian, which has been quite sluggish on the release front in recent years. This hectic release cycle largely contributes to Ubuntu's success. People like their desktop distributions to take advantage of the most recent offerings OSS has to offer, and frequent — and usually significant — releases keep the community interested.

FEISTY ON ONE DISC

One of the most pleasant things about Ubuntu is that it all fits onto one CD. There aren't reams of never-used applications of varying quality crammed onto multiple discs, which

is a big turn off when downloading a distribution to try out. With Feisty, the applications included still feel well-selected and consistent, with the only real interesting difference being a graphical disk usage analyser, allowing you to tell where all your hard disk space has gone.

Unsurprisingly, the slightly sickly brown theme remains, mostly unchanged from the previous version, Edgy Eft. No matter how opinion dividing it remains, the "human" theme is undeniably distinctive, useable and consistent — properties, which are sadly lacking in many other gaudy Linux distributions.

PACKAGE MANAGEMENT

Ubuntu uses the excellent APT as its package management system. Such a wonder of technology would be nigh impossible to implement on such a scale on Windows and Mac platforms, not so much from a technological standpoint, but from a licensing angle. This is where Linux has a huge advantage — most of its available software is remarkably free to use, allowing the Ubuntu community to create huge repositories of software that one can peruse through, download and install easily from the command line or from a tidy interface.

Although it didn't make the final chop, it's worth noting that an OpenGL-accelerated desktop, either powered by Compiz or Beryl, was due to be added this time around. This sparked a lot of debate — although flashy, neither desktop has really reached maturity yet, and Ubuntu has a general reputation for stability to maintain. This wobbly windowed goodness is available through APT, however. If the developers get this working reliably on a variety of different hardware configurations, we say no great loss. It could be said that this puts Feisty Fawn on a slight disadvantage against OS X and Vista, but a desktop that works is far more preferable to us.

If you try Feisty, grab the package Ubuntu-restricted-extras from APT. It's a meta-package that will take care of downloading and installing Flash, Java, Microsoft True Type fonts and numerous video codecs all in one "dummy package". Nothing revolutionary here, but it really does help to shorten post-install configuration. In addition, a further step has been taken towards multimedia nirvana — Feisty will automatically try and download a codec if you try and open an unsupported video format.

WIRELESS MANAGER

Previous versions of Ubuntu suffered from having no effective means for users to manage wireless connections. The old interface made connecting at the local Starbucks a task more daunting than it's worth. Feisty introduces Network Manager — an applet that attempts to discover as much information about the network as it possibly can, leaving you to enter just the password if required.

This is a vast improvement on the previous interface, which required you to know the ESSID and key type, user knowledge not required in either OS X or XP/Vista, and would often leave the more experienced Linux users cracking open a terminal and using iwconfig instead. With Network Manager, Ubuntu is now a viable OS choice for laptop users.

In all, we expect April's Feisty Fawn release to live up to the high standards set by previous versions of Ubuntu. The steep learning curve that keeps many from Linux is mostly levelled in Feisty. Once released, it promises to be easy enough for those new to Linux, while remaining stable and flexible enough to draw the sandals and beard crowd.

Jim Haywood

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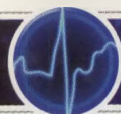


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Nikon D40 DSLR

The latest DSLR from Nikon gets smarter and cheaper.

The race to create the biggest and best digital SLR camera has revolved around the idea that more megapixels are better.

Nikon has come to its senses and realised that the average user has no need for a 10.1 megapixel behemoth in order to photograph the family picnic. This camera's good body and a great viewfinder have more than compensated for the D40's comparatively low 6.10 megapixels.

Nikon has re-entered the low-cost end of the DSLR market with this well-built successor to the D50, it retails for just under \$1,000 for the 18-55mm ED kit. It still may not sound cheap to some, but at a saving of over \$300 from the D50,

you get some greatly improved features for your dollars.

The standout feature for us is the new Auto ISO function, which is pulled straight from the more expensive Nikon D80. The Auto ISO lets the camera do the hard work of metering, while staying within your set limits of maximum ISO or minimum shutter speed, depending on your preferences.

There is the usual 2.5in LCD monitor, but for those who'd rather shoot the old-fashioned way, the viewfinder has been overhauled, making it larger and brighter with the shutter lag improved.

If you're considering purchasing the D40 — be warned. A major drawback for anyone upgrading

from a film SLR to a DSLR is the fact that the body does not come with an internal focus drive motor. This means the D40 will only allow auto-focus to function with the AF-3 and AF-I series of lenses. Any standard auto-focus AF Nikkor lenses will still work on the camera body, but only in manual-focus mode.

But, for the average Joe who wants to acquire a quality

digital SLR at a reasonable price, we can whole-heartedly recommend the D40 for everyday shooting.

For the keen amateur or semi-professional, we'd suggest you go for the more robust D2Xs.

Christopher Zammit



CONTACT Nikon

ONLINE www.nikon.com.au

MARKET Everyone

PRICE \$999.95 (18-55mm ED kit)

✓ Auto ISO function; great price.

VERDICT ★★★★★

✗ Lack of Internal Auto Focus Drive.

Olympus Tough 770SW

Finally, a camera that can survive the kids getting their hands on it!

Digital compacts scare the hell out of us. They always seem so small and fragile that we're afraid we'll break the damn thing by looking at it too hard. It's good to see that manufacturers are catching on to this and making technology that can withstand the knocks of daily use.

Olympus has definitely been

hard at work researching how to improve the durability of the 770SW from its predecessor (the Tough 725SW).

There are some durability features that will keep the Tough 770SW safe: it's now waterproof to ten metres; crush-proof to withstand 100kg pressure; snow-

proof (and can withstand temperatures of -10°C); and, to top it all off, the 770SW is shock-proof if dropped from up to 1.5m high.

That's all well and good. But does it take good photographs?

With three aspherical lenses, three times optical zoom and 7.1 megapixels to capture all the detail you want, the 770SW takes clean, sharp images up to 3,072 x 2,304 pixels in size.

Like most compacts, quality suffers slightly in poor lighting, though the 770SW handles these conditions better than most with a varied selection of shooting modes available — from candlelight to night shooting.

The body, though made for durability and not aesthetic beauty, has its own rugged appeal. We can all appreciate the look of a well-made gadget whose form fulfils a function — in this case to keep what's inside functioning. With its flat design, the Tough 770SW is highly mobile and fits snugly into your pocket.

The only drawback of the product is the positioning of the lens, which is located too close to the left of the camera for ease of handling. As you try to keep your fingers out of shot, you find yourself holding the camera by your fingertips and looking more like someone enjoying high tea rather than trying to take a picture.

With practice this problem is soon forgotten: the more you handle the Tough 770SW, its ease of use, practicality and sharp images will win you over.

Christopher Zammit



CONTACT Olympus

ONLINE www.olympus.com.au

MARKET Everyone

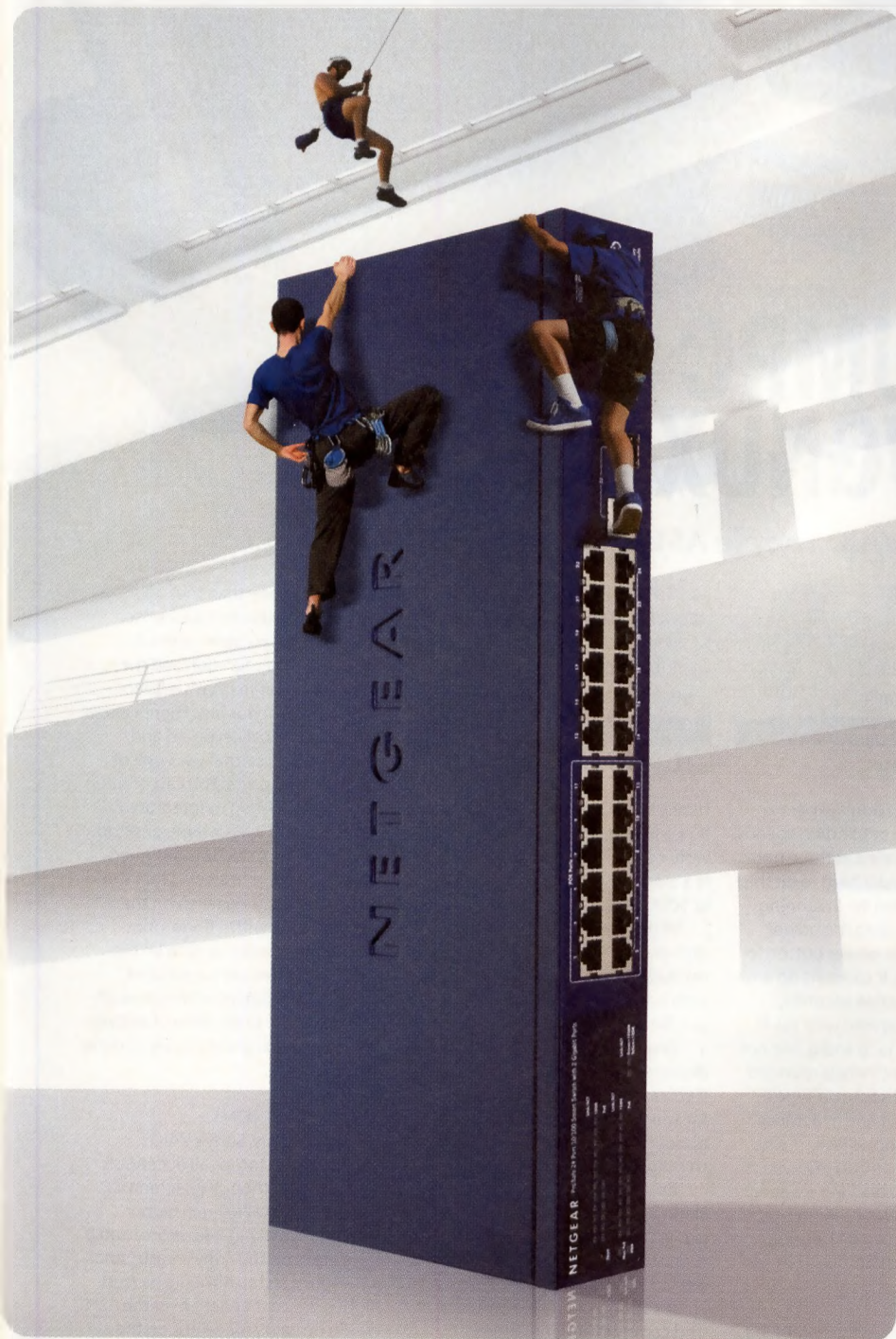
PRICE \$530

✓ Pretty much indestructible.

VERDICT ★★★★★

✗ Poor lens positioning; weak flash.

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HEAD TO HEAD

ASUS R2H UMPC vs Sony VAIO VGNUX27GN

Head to head — can the Sony VAIO topple ASUS' UMPC?

This month we got two popular UMPCs into the Labs to give them a good going over, here's what we found.

SONY VAIO VGNUX27GN

Sony's VGNUX27GN looks innovative, delivers something unique to the market and stands out in the mobile computing crowd.

One of the biggest problems with mobile computers is data input. While UMPCs typically use handwriting recognition and an onscreen keyboard, the Sony has a slide-out keyboard that pulls down from behind the display. It's easy to use, although the smaller keys do take some getting used to.

The 4.5in display runs at a resolution of 1,024 x 600. While this means that there's plenty of vertical scrolling to read what's on screen, horizontal movement isn't needed often. Like most LCDs, it wasn't very clear in bright sunlight. There's a stylus for screen-based input.

As far as computing power goes, it runs an Intel Core Solo processor with 1GB of RAM and a 40GB hard drive. While this isn't anywhere near high-end desktops and notebooks, it's near the top of the tree for a handheld. It was more than good enough for browsing, email and

CONTACT ASUS
ONLINE www.asus.com.au
MARKET Everyone
PRICE \$1,799

✓ Lots of ports; GPS.

VERDICT ★★★★★

✗ Poor screen; slow.

office apps — just don't expect Photoshop to run at blinding speeds.

Battery life is rated at three hours, although we found it hard to hit this with the screen and Wi-Fi running full-time. By changing the power settings to use the power button for suspend/resume, it can start up and be usable in just a few seconds.

Comms are covered with Wi-Fi supporting 802.11a, b and g, but not Bluetooth. Connectivity is rounded off with a USB 2.0 socket, a Type II CompactFlash Slot and a Memory Stick Duo, headphone jack, microphone jack and an I/O connector for the docking station.

Our test unit was running Windows XP, but can be bought with Vista Business Edition.

ASUS R2H UMPC

In contrast, the ASUS R2H UMPC has a much larger screen and footprint, but has only 768MB of RAM (not nearly enough for Vista and only

CONTACT Sony
ONLINE www.sony.com.au
MARKET Everyone
PRICE \$2,499

✓ Great screen and keyboard.

VERDICT ★★★★★

✗ Better battery life would be handy.

barely enough for XP Tablet Edition). It was little wonder we felt that we were constantly waiting, as the CPU is a mere Intel ULV Celeron M clocked at 900MHz.

With a larger screen, the R2H delivers only 800 x 480 as its native resolution. This hinders productivity, with both horizontal and vertical scrolling required to view a page.

One of the bonuses that the R2H delivers is an integrated GPS receiver. If you're looking for a meeting location on the go it's a real boon, although how you'd mount a unit this big in the car is a real challenge.

As you'd expect with such a skinny allocation of RAM and CPU power, the R2H was pitifully slow. Many times we were left wondering if the device had frozen.

It's strong points are connectivity and communications. There's 802.11b and g, Bluetooth and a slew of connection ports. Given that the R2H has a lot more room for extra

ports on its body than the VGNUX27GN, this isn't a surprise.

Data input is dependent on handwriting recognition and the software keyboard that's available from a single stylus tap. There's also a foldable external keyboard and mouse in the box that uses one of the three USB ports. You can position the R2H upright on its integrated stand, making it a portable desktop.

Given that the R2H is designed for road warriors, it's good that some extra care has been taken on the security front, with a fingerprint scanner integrated so data on the 60GB hard drive can be secured.

The ASUS R2H runs Windows XP Tablet Edition. At the time of writing there weren't any Vista drivers on the ASUS web site.

AND THE WINNER IS...

Not surprisingly, Sony's VAIO VGNUX27GN stomps all over ASUS' R2H UMPC. Although its screen is smaller, it runs at a much higher resolution, making it far more usable. Data input on the Sony is easier and it performs faster. Although priced higher, the cost benefit over the R2H would be easily made just on the wait time it takes on system restarts and operational performance.

Anthony Caruana



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NetObjects Fusion 10

Veteran web authoring tool NetObjects Fusion 10 has some new tricks up its sleeve.

Lesser web authoring tools have come and gone, but NetObjects Fusion keeps ploughing forward. Launched way before Dreamweaver and FrontPage, Fusion has evolved from a code-crunching HTML-authoring tool to a template-based site builder. It's traditionally targeted at less technical users, but is this a version of NetObjects Fusion for professional web developers?

The short answer is probably not. For small businesses and personal site developers though, NetObjects Fusion could be a better choice than the expensive bundles offered by Microsoft and Adobe. It's a mature piece of software with a strong set of production tools, from template creation and Flash animation to database connectivity.

Previous versions of Fusion have emphasised site creation above other features, and Fusion 10 still boots into a splash screen that prompts you to create a new site or open existing files. You can use the Site Wizard to quickly create and populate a site, selecting from pre-fabricated SiteStyles and layouts. When the Wizard has finished, you're dropped into the Site section, where you can edit and amend the structure that's been created for you.

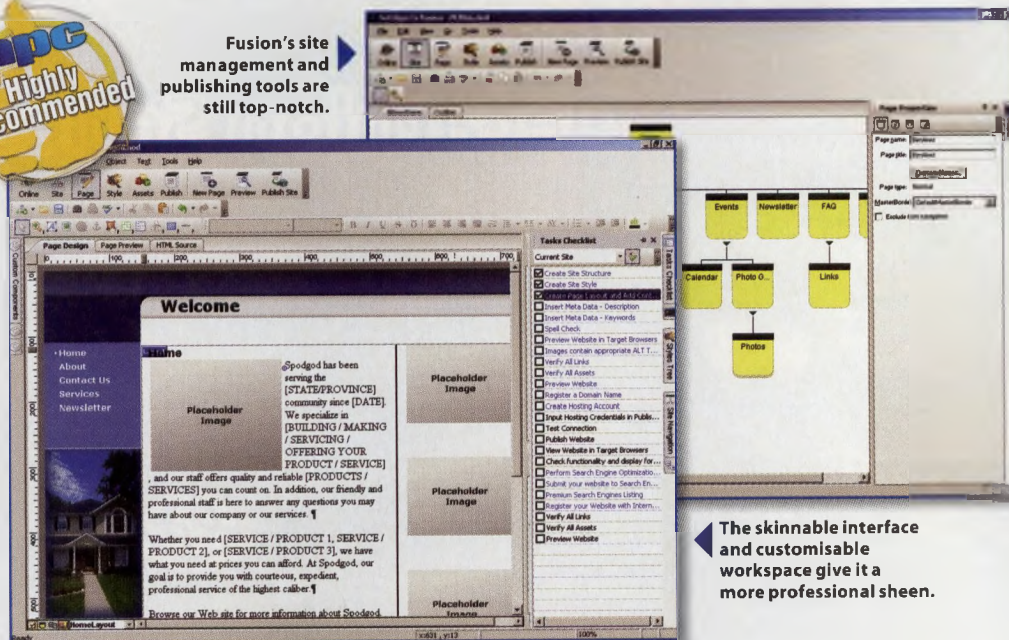
One thing we immediately noticed is that NetObjects Fusion 10 is looking like a serious application these days — with a consistent, integrated interface. When using older versions it sometimes felt like you were navigating a web site.

CUSTOM LOOK

The interface overhaul continues into the application's main editing sections: the Page and Style views. It's immediately apparent that this is a more flexible version of Fusion. The main workspace can now be customised to your workflow. Palettes can be grouped together and accessed with tabs. A series of essential dialogs are instantly accessible by clicking tabs that run vertically down the right of the document window. Toolbars can be customised with new buttons or



Fusion's site management and publishing tools are still top-notch.



The skinnable interface and customisable workspace give it a more professional sheen.

• **CONTACT** NetObjects
• **ONLINE** www.netobjects.com
• **MARKET** Everyone
• **PRICE** US\$199

✓ Powerful; effective.

• **VERDICT** ★★★★★

✗ Proprietary file format.

banished from the interface altogether. When you've finished arranging the workspace you can save it with a name of your choice — a feature conspicuously missing from both Expression Web and Adobe Dreamweaver.

A very welcome addition is the Tasks Checklist, a floating palette with a ready populated workflow for building your site. Part task list, part wizard, double-clicking on any of the entries gives control of your cursor over to Fusion, taking you to the required section of the program. When a task has been accomplished, give it a tick and move on to the next.

The main story in NetObjects Fusion 10 is that it's now CSS-savvy and outputs W3C-compliant code. The new tools are visible from the moment you launch into Page view, with a tabbed CSS palette replacing the old text formatting tools. The palette offers menu-driven formatting, full property sheet access or code-level editing. A handy tip: right-click in the code

editor for a contextual menu that allows you to import existing CSS styles direct from your hard drive.

As well as CSS editing in Page view, there's now a CSS library in the Styles section — and quite an extensive library at that. SiteStyles too have been overhauled with CSS layout properties, so it's now easier to edit and customise the site themes that ship with the package. This is just as well. NetObjects Fusion comes bundled with several new "professionally designed" SiteStyles, alongside many themes from previous versions — but they fail to impress.

FLASH FIZZLE

It doesn't help that another of Fusion's new features encourages site builders to commit one of web design's worst sins. Flash Components let you create animated banners, headers and prefab characters with no coding. Quick, easy and entirely pointless. There's a more useful Flash gallery builder component built-in, along

with the database connectivity components introduced in previous versions.

A bundled set of bonus applications more than makes up for the plethora of mediocre templates. The NetObjects Toolbox features new Style Creator and Style Builder apps that allow you to quickly make your own SiteStyles from scratch, using sliced layouts created in any image editor. A wizard-based Graphics Editor is great for creating buttons and other bits from bundled images. There's also a Site Mapper, which generates a links page that helps to optimise your site for search engines. NetObjects rounds off the package with an Ad Creator, for the less ethically minded web builder.

NetObjects Fusion 10 is very good in parts. The CSS features and Task Checklist are welcome features, but there are aspects of the tool that the developers overlook every revision: the old-fashioned templates, the inclusion of features that encourage poor design practice, the proprietary file format. Still, for fast and reliable wizard-based site building with strong management and publishing tools, Fusion has no equal.

Karl Hodge

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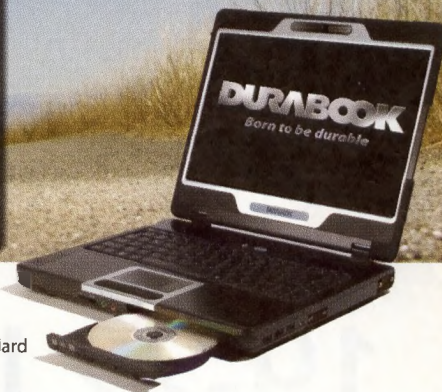
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- Intel Core 2 Duo processor T7600 (2.0GHz, 4M L2 Cache, 667MHz FSB)
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- Intel 945GM Chipset

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Rugged Outside

Rugged Spec. Drop / Shock / Spill – Military 810F Standard

Security Features

One Smart Card socket for identity protection & TPM 1.2 Support

Performance Inside

Intel Centrino Duo Mobile Technology

- Intel Core 2 Duo processor T5600 (1.83GHz, 2M L2 Cache, 667MHz FSB)
- Intel Pro/Wireless 3945ABG (802.11a/b/g)
- Intel 945GM Chipset

- Genuine Windows Vista Business Edition or Genuine Windows Vista Premium Edition
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- 80GB / 120GB / 160GB SATA HDD 5400RPM
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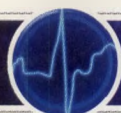
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19-22 inch widescreen LCD monitors

22 is the new 19, and we look at both. *Nick Race* checks out the best way to get more desktop real estate.

Without exception, every person who I've spoken to over the past 12 months that has switched to using a wide-screen monitor has loved it. It's one of those changes to the standard face of the PC that really raises the question, "Why wasn't this done years ago?" It adds more usable space to your desktop than just going to a bigger screen size, with benefits for both entertainment and productivity. Games feel more natural to play, movies are in the right format and HD content can be

viewed at the right (or nearer, at least) resolution. Working with two documents side-by-side boosts productivity: a working document on one side and a reference document on the other is closer to how people work on a real desk.

The price of LCD monitors has dropped amazingly over the past few years, and dare I say a monitor is no longer the one piece of a PC system that would last you through multiple generations of hardware. As the technology of LCD manufacture has become more

refined, the size of panels that can be had at a budget price has increased dramatically. 20in+ LCD monitors have halved in price over the past twelve months, largely due to new LCD fabrication plants coming on line in Taiwan and South Korea.

There's also a new consideration when buying an LCD monitor that's going to last for a while — HDCP support for HD playback. Currently it's not a limitation, HD DVD and Blu-ray discs aren't shipped with HDCP copy protection at the

moment; however, it's going to be standard on discs from 2010, and that's not so far off.

So, it's time to ditch that trusty 15 or 17in monitor and upgrade to a wide-screen LCD — you'll never look back.

THE CONTENDERS

We had an outstanding response to the request for LCD monitors for this challenge, but we were quite picky about just what we wanted to see. As some vendors haven't switched to the relatively new 22in

NICK RACE — TECHNICAL EDITOR

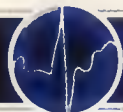
Nick Race is APC's Labs Editor. He has been benchmarking and testing PC equipment full-time since 2004 and views every product with a critical eye. Apart from specialising in x86 server hardware and desktop/business storage products, Nick is also responsible for the smooth running and pertinent testing in the APC Labs.

THE
playersten
TESTED

wide-screen format and size, we also accepted 19in screens, which are still the sweet spot for price versus size. 19in models will certainly save you some money, and, if your PC is primarily a workhorse, then going to 22in might be a tad overkill, so we included the smaller models as an alternative for those who don't need that extra screen real estate (or who want to save some cash).

Our invitation stipulated we receive monitors that are just that:

VENDOR	MODEL	PRICE	ONLINE
1. Chi Mei	221D	\$479	www.protac.com.au
2. Acer	AL2216WD	\$599	www.acercom.au
3. HP	w1907	\$549	www.hp.com.au
4. LG	194WT	\$349	www.lge.com.au
5. Dell	E228WFP	\$499	www.dell.com.au
6. ASUS	MW221U	\$750	www.asus.com.au
7. BenQ	FP222W	\$649	www.benq.com.au
8. Viewsonic	VX2245wm	\$799	www.viewsonic.com.au
9. Proview	FP2226W	\$369	www.proview.com
10. Samsung	226BW	\$799	www.samsung.com.au



▲ The Viewsonic's iPod dock, not the most attractive of inputs.



PC screens. There's now a large crossover between PC LCD monitors and smaller LCD TVs. In this case, we were really looking for a PC product rather than a jack-of-all-trades screen. LCD TVs in smaller sizes aren't to be discounted though, as the flexibility of using the screen for both TV and PC is very handy, especially in places where separating the two just adds extra expense (or wastes space, like bedrooms, small apartments or a study). In this case, we wanted the latest technology for computers — and without the extra expenses of built-in tuners and speakers that go hand-in-hand with multi-use screens.

All in all we received ten screens from larger vendors. Two of the screens are 19in models, and all of them PC-centric components. The vendors who participated are: LG and HP with 19in models, and Proview, Chi Mei, Dell, Acer, Viewsonic, Samsung, BenQ and ASUS all with 22in screens. See the table on page 57 for the models each vendor submitted.

Only one screen, the Viewsonic, offered functionality beyond a basic screen, with the ViewDock VX2245wm also acting as an iPod dock, with video (iPod) feed through and built-in USB hub and card reader. It's a nifty addition if you're an iPod user, though it adds a huge amount of bulk and size to the monitor — and is near useless if you don't have an iPod.

The HP Pavilion w1907 monitor added some minor functionality, Easy Clip — which allows the attachment of plastic holders and devices to the side of the monitor (without the aid of Blu-Tack). It's used for personalising the screen with photo or pencil holders, document holders, web cams or miniature vases, of which the entire product range has not yet been announced. It's a small thing, but a nice touch.

HOW WE TESTED

Each monitor was connected to a test bench computer running an Nvidia GeForce 8800GTS 320MB video card from MSI. The visual quality tests were performed using Nokia's NTest utility for colour and light uniformity and moire effects. A scene from *We Were Soldiers*, containing high-speed motion to accentuate motion blur (as well as

dark scenes to show differences in contrast), was used to directly compare monitors.

Each screen was tested individually and then paired with another using desktop-mirroring for direct comparison. A competition-style draw was established to end up with the top three screens in terms of image quality and motion blur.

EYES FORWARD

Comparing ten monitors running simultaneously side by side would be the ideal way to establish which gives the best overall performance. Unfortunately, a ten-way, high-resolution DVI splitter is not a device that can be come across easily, so we had to use an alternative method to figure out which was best. The screens were paired up, simultaneously connected to a single video card and compared side by side — the "winner" was placed in to the next heat, and so forth until the differences could not be told apart by eye.

All the models on the bench lived up to expectations — that's not saying some aren't better than others. As a whole, the monitors submitted all presented a clear, bright image and decent contrast in darker areas. What that meant for our results was choosing the screens that really excelled, rather than discounting inferior models. It makes the task much harder for us, but choosing one a much easier task for you.

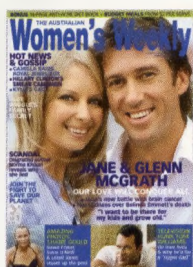
With the exception of the 19in models from HP and LG, all the screens on test support a native resolution of 1,680 x 1,050. This is just slightly below the resolution of HD content in 1080i or 1080p, which use 1,080 vertical lines. You'll have a hard time telling the difference though. The HP and LG units, both of which are 19in models run at 1,440 x 900 resolutions.

The standout monitors in terms of colour and brightness uniformity were the ASUS mw221U, the Acer AL2216WD and the BenQ FP222W. These screens' viewing angles were wide enough to stop the artificial darkening of colour in your peripheral vision due to the angle of the light emanating from the screen. In layman's terms, colour is consistent over the whole screen all the time, and the corners don't

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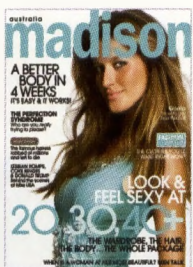
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Domino effect: this month's lineup had little to tell them apart.

tend to look dark. This also coincides with the panel finishing (a choice between "ultra-bright" gloss finishes and the standard matte-type finish). Gloss finishes on the LCD monitors tend to make colours look much brighter and more vibrant, but result in reduced colour uniformity over the entire screen, while matte finishes slightly scatter the light coming from the screen for more even results.

SEEING THE LIGHT

On the flip side, the brightness and contrast from the screens with gloss finishes was noticeably better. The Samsung 226BW and the HP w1907 both fall in to this category, giving outstandingly good images (centre screen) and excellent contrast in light/dark scenes. What's also interesting about one of the new big buzzwords in LCD marketing is that the contrast ratio listed in the LCDs spec sheet rarely coincides with just how good light/dark areas look. Side by side, monitors advertised with a 700:1 contrast ratio couldn't be picked from those advertising a 600:1 contrast ratio,

though there is often a price premium for screens with higher contrast ratios (such as a \$100 premium on Acer's 2416WD monitor with a 1,000:1 contrast ratio and dual DVI, as opposed to the 700:1 and DVI and D-Sub of the 2216WD reviewed here). LG claims a 2,000:1 contrast ratio on their 194wt model submitted; however,

more impact than the advertised contrast ratio spec.

BLUR, BABY, BLUR

Examining a high-motion scene from a DVD is an excellent way to

In application, all the screens performed well; whether listed at 8ms or 5ms, there was little blurring across any of the screens. A quick round of F.E.A.R. was also used to establish if the screens



IN APPLICATION, ALL THE SCREENS PERFORMED WELL; WHETHER LISTED AT 8MS OR 5MS, THERE WAS LITTLE BLURRING ACROSS ANY SCREENS.

its visual performance was no better than a 6-700:1-rated model.

In practice, the correlation between an advertised 700:1 ratio and a 600:1 ratio panel was independent of how the screen actually performed with detail in dark scenes, and the coating had

establish the tendency of LCD monitors to blur during videos and gaming. This has a correlation to the response time of the LCD panel, though how that response time is measured and how it applies to different LCD technologies is far from a standardised practice.

could keep up in FPS games (which can change much more rapidly with a flick of the wrist). Needless to say, there were no standouts in either direction in both scenarios. Thankfully, the day of a full-screen smear when playing games or watching movies is behind us.

SEEING INTO THE FUTURE — HDCP

Some of the models included in this roundup are labelled as "Vista-compatible", a less than obvious reference to HDCP (high-bandwidth digital content protection) support for future HD video protection requirements.

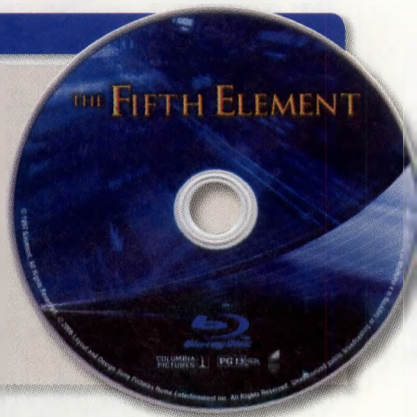
Choosing a screen with HDCP support now will allow you to view HDCP-protected content in the future, provided you're running Vista (or some other future HDCP-compatible

OS) and an HDCP-compatible video card. Keep in mind that buying a screen based on its HDCP compatibility now will not make a lick of difference if you're one of the very few who have stumped more than \$1,000 on an HD DVD or Blu-ray drive, as current movies in these formats do not enforce HDCP requirements.

The screens from Samsung, ASUS, Acer and Dell submitted for the

challenge all offer HDCP-compatibility when used with the DVI inputs. Our attempts at running these screens with a Blu-ray movie were stymied by lack of HDCP-locked content.

The timeline for HDCP-locked films on shelves is between 2010 and 2012, as the feasibility of locking content with HDCP is nil when the vast majority of screens (both PC and TV) do not currently support it.





AFTER HOURS OF SQUINTING AT PANELS SIDE BY SIDE, WE EVENTUALLY MANAGED TO ISOLATE SOME STUNNERS FROM THE MERELY EXCELLENT

Some of the screens, including BenQ and Acer, feature specific technology that changes the screen's characteristics based on the type of content being shown. BenQ's Eyesense changes the brightness and colour saturation of the screen when watching movies for bright, vivid images — and lowers the brightness when working on documents, to reduce eye strain for long periods of work.

LET THE BAND PLAY ON

Colour banding is one of the biggest no-nos in LCD tech, but a hard thing to avoid with certain LCD technologies. All of the screens on the bench were put through a banding test, which runs through a 256-shade gradient in red, green and blue. If a screen is prone to banding, then you can see it separating blocks of

shades. Mentions here go to the Chi Mei 221D, the Proview FP2226W and the Dell E228WFP monitors. All three got through the banding test with the least amount of distortion. The LG 194WT had a hard time of it though, showing banding in RGB and white/black. Not terrible, but noticeable.

IN AND OUT

As we specifically asked for PC-centric screens for this Labs Challenge, we weren't presented with oodles of input options, speakers or tuners for other types of media. The exception was the Viewsonic VX2245wm screen, which includes an iPod dock, passable speakers, a memory card reader and USB hub. Beyond the Viewsonic, all of the screens included a DVI input paired with a VGA D-Sub input. None had HDMI, though it wasn't expected.

The screens from HP and ASUS both include small speakers with a single input. Though they'll never be a replacement for a decent set of desktop speakers in this day and age, the functionality could be handy in an office environment. The quality is average in both cases.

The Proview FP2226W was slightly different in that it offers a single DVI port and two VGA D-Sub connectors. Ostensibly, it's for switching between computer sources, but why two DVI ports weren't included instead is a question for the ages.

WHICH IS THE BEST?

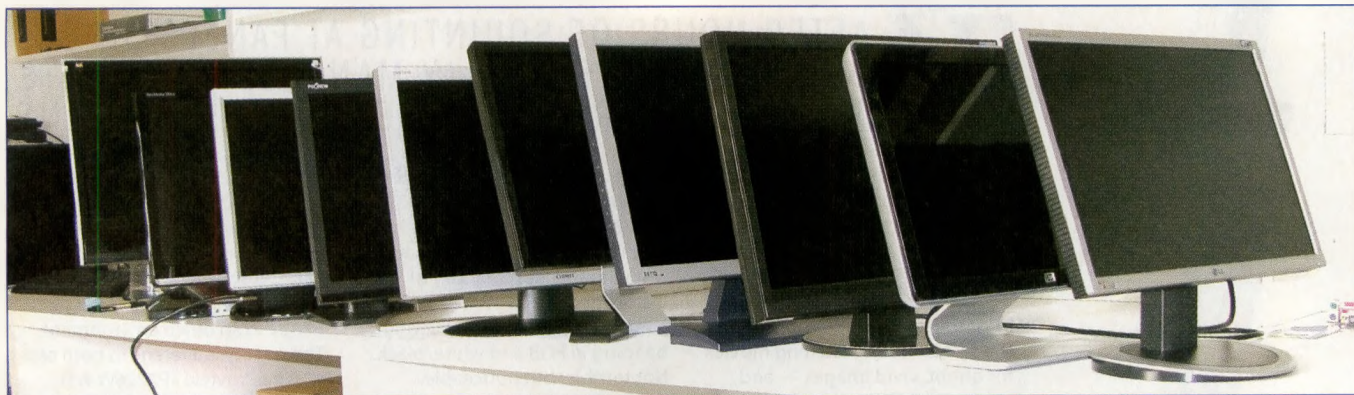
After hours of squinting at panels side by side, we eventually managed to isolate some stunners from the merely excellent. What it really came down to is personal preference based on the aesthetics and usability of the monitor, after



	CHI MEI 221D	ACER AL2216WD	HP W1907	LG 194WT	DELL E228WFP
Size	22in	22in	19in	19in	22in
Native resolution	1,680 x 1,050	1,680 x 1,050	1,440 x 900	1,440 x 900	1,680 x 1,050
Refresh rate	5ms	5ms	5ms	5ms	5ms
Contrast ratio	800:1	700:1	1,000:1	2,000:1	800:1
Brightness	330cd/m2	300cd/m2	300cd/m2	300cd/m2	300cd/m2
Viewing angle	170H/160V	170H/160V	160H/160V	160H/160V	160H/160V
Connectivity	DVI; D-Sub	DVI; D-Sub	DVI; D-Sub; 3.5mm jack	DVI; D-Sub	DVI; D-Sub
HDCP support	No	Yes	No	No	Yes
Dimensions	532 x 402 x 224	513 x 405 x 192	462 x 380 x 184	435 x 370 x 226	511 x 409 x 149



✓	Great contrast	Great contrast	Clear, very bright image	Bright, even image	Good all-round monitor
✗	Plasticity	Slight banding at times	Corners slightly dark	Loses some detail in dark scenes	Gets very hot
Verdict	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆



differences in picture quality could no longer be detected.

We came up with two screens, one with a gloss finish and one without, as everyone has different views and tastes on gloss finishes, either in LCD monitors or laptops. Some dislike the high-gloss finish, especially if they work in very well lit environments where reflections can become an issue. Our pick of the glossed LCD monitors is the HP w1907. It's smaller, but the screen is crystal clear, very bright and suffers from darkened corners slightly less

than the Samsung (most purely based on size). If you do want to go to 22in, then the Samsung can't be passed over.

From the matte group, our vote goes to the Acer, closely followed by the ASUS and Dell monitors. The Acer performed slightly better in darker scenes, earning the top gong. That said though, the difference in picture quality is extremely small; purchasing on aesthetics or price between the three screens would see you get pretty much the same result.

The prices available on screens such as the LG, BenQ, Chi Mei and Proview are so competitive, even though they didn't win an award, they're certainly worth considering as a purchase.

If you want the extra functionality of the iPod dock from the Viewsonic, then rest assured you're not forgoing picture quality in the equation — its rare when you can get your cake and eat it too. Just be aware — it's ugly.

This Labs Challenge was one of the hardest direct comparisons

that's ever happened in the APC Labs, purely because of the very high standards of all the products that were presented. It's a rare thing when a product doesn't quickly establish its superiority (or when less-than-stellar products don't present themselves after a little bit of digging).

It's a success for the LCD manufacturers, but ultimately it's a boon for the consumer, who is much less likely to get stuck with a lemon when the bar is set so high across the board. [ETC](#)

ASUS MW221U	BENQ FP222W	VIEWSONIC VX2245WM	PROVIEW FP2226W	SAMSUNG 226BW	
22in	22in	22in	22in	22in	Size
1,680 x 1,050	1,680 x 1,050	1,680 x 1,050	1,680 x 1,050	1,680 x 1,050	Native resolution
2ms	5ms	5ms	5ms	5ms	Refresh rate
700:1	700:1	700:1	700:1	700:1	Contrast ratio
300cd/m2	300cd/m2	280cd/m2	300cd/m2	280cd/m2	Brightness
170H/160V	170H/160V	150H/140V	170H/160V	160H/160V	Viewing angle
DVI; D-Sub; 3.5mm jack	DVI; D-Sub	DVI; D-Sub; 3.5mm jack; USB; memory cards; iPod	DVI; D-Sub x 2	DVI; D-Sub	Connectivity
Yes	No	No	Yes	Yes	HDCP support
514 x 401 x 228	518 x 422 x 170	524 x 493 x 212	523 x 404 x 210	504 x 408 x 219	Dimensions



Clear, even image	Nice, even brightness	Built in USB hub and functionality	Three PC inputs; good image	Excellent clarity and even lighting	✓
Small loss of detail in dark scenes	Some banding	Darker corners due to lower viewing angle	Some mudiness in darker tones	Some banding	✗
★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆	Verdict

Building for Vista™ with Foxconn

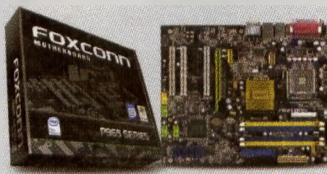
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- 4* SATAII, 1* eSATAII, RAID
- 2* IEEE1394a



G9657MA-8EKRS2H



- Intel® P965 chipset
- Dual DDR2 800, 4* DIMMs, 8Gb Max.
- 7.1 channel HD Audio, Gigabit LAN
- 1* PCIe x16
- 6* SATAII, 1* eSATAII, RAID
- 2* IEEE1394a



P9657AA-8EKRS2H



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- 2* IEEE1394a



975X7AB-8EKRS2H



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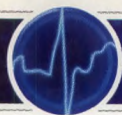
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Small business VoIP



The Voice Over IP buzz is moving beyond the home to business. But if you're a small office with a handful of telephones, where do you start? *William Maher* fits together the pieces of the puzzle.

It's getting harder to ignore VoIP if you're one of the 1.2 million or so small businesses in Australia. There's a stack of companies pushing the technology, almost 200 VoIP providers at last report, and predictions from researchers Market Clarity are that the number of (mostly free at this stage) subscribers will reach over one million by 2006-2007.

At the same time, access to fast VoIP-capable broadband is taking off. Market analyst Paul Budde predicts 50% of Australia's SMEs will have access to VoIP via ADSL2+ within two years after launch.

Done the right way, VoIP has the potential for massive cost savings for business, as well as advanced features like office phone numbers you take with you, intelligent call routing, and bundled services like virtual call centres. Providers have also cottoned onto the idea of hosting call centre and IP telephony features off-site, so that it is no longer necessary to buy the hardware or have the staff to run it. Great news if you're a small business with no expertise.

The flipside is bad voice quality, or even loss of voice connections

altogether if your network goes down. And there's the rub: there's a huge difference between VoIP for home and the business-grade variety. The range of VoIP services and technologies out on the market is vast, everything from peer-to-peer Skype to fully hosted managed IP Centrex packages over a private network.



THE RANGE OF VoIP SERVICES AND TECHNOLOGIES AVAILABLE IN THE MARKET IS VAST

Small businesses are sandwiched between the simplicity of single-line VoIP boxes for home and large multi-site configurations involving hundreds of phone extensions. For an office with a handful of telephones — and possibly a remote branch — where do you start?

REALITY CHECK

Believe it or not, the promise from some business VoIP technology vendors is for call quality equal to or better than a normal telephone connection. We've even seen the

term "CD quality" used, which we'll take with a lump of salt, thanks.

Don't kid yourself, VoIP technology isn't perfect. If you have tried free VoIP or even used some paid-for residential VoIP to call friends overseas, you may have experienced a bad VoIP call. Depending on your broadband speed and other factors (we're not

internal phone calls, but for front-line communications between a customer and a business, it just doesn't work," he wrote.

WHAT IS BUSINESS-GRADE VOIP?

There may be sceptics — but business VoIP in theory is a vastly different scenario to the home variety available.

writing-off residential VoIP), you'd be forgiven for recoiling in horror at the thought of running your business communications on it.

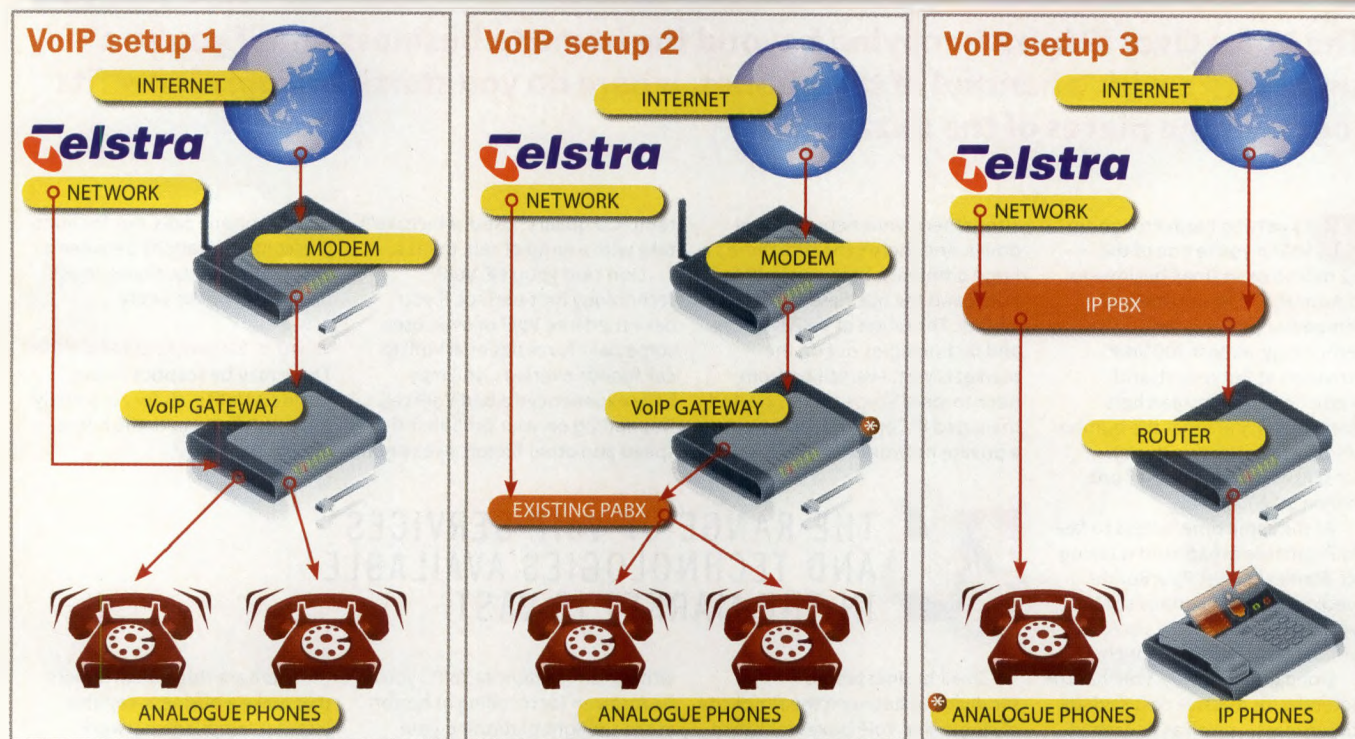
Take this letter from an APC reader this month, who argued that people recommending VoIP for customer contact "should be shot": "VoIP might be fine for home use or

There are three main factors that make a business-capable internet telephone network different — traffic congestion, quality of service, and service agreements (SLAs). That's before we get to the hardware.

While 512K/512K connections are often cited as a bare minimum



CONNECTING YOUR BUSINESS VoIP HARDWARE



* Router calls to VoIP provider.

* Analogue phones connected via FXS port.

for reliable VoIP calls, bandwidth requirements get multiplied in an office full of phones. "We allow 40K per call," says Ben Swanson, a pre-sales engineer for the SMB group in IP communications company, Avaya. "We know that it's actually about 32K, but we make sure there's a little bit of room there to move forward. Let's say over a 512 x 512 link, that equates to about 16 calls." The rest of your

data traffic also has to be taken into consideration on top of the voice.

The key for business is not just upload speed, but how much traffic there is on your part of the network. The ideal scenario for a business VoIP connection is for a low congestion link, usually a link sold with a guaranteed low rate of shared traffic. As an example, see the contention ratios for Pacific Internet's Premium Broadband for business at <http://www.pacific.net.au/broadband/premium/>.

The next step up is a connection via a dedicated private IP network. This is ideal for business VoIP; traffic congestion is non-existent, and the ability to prioritise voice is better. Calls are transported over a private backbone: not over the general internet.

Private networks provided by many business-grade VoIP carriers are crucial, as AAPT's Steve McGrory explains. "This is a

controlled network — we manage the quality of service. It's not like Skype, whereby they're just using the internet connection and there's no QoS. We prioritise the voice traffic."

With private networks also comes service guarantees. Business VoIP providers provide a list of guarantees including response and repair times, network availability, packet loss and latency. In the case of AAPT Business Connect, for

MAJOR VoIP COST DECISIONS

You will need to make some basic but important decisions on your VoIP setup, based on your budget, including:

- Phones — IP Phones or analogue phones with adaptors?
- Network provider — dedicated IP network (better performance, but costs more) or general internet?
- Local or hosted switching — can you buy and install the equipment in your building?
- Basic or advanced switching —

Can you afford a full IP PBX, or basic gateway box?

• Open source — open source Asterisk switching software can replace expensive proprietary IP PBX switches, but expertise is needed.

• Unified cabling, voice/data apps — do you want extra applications, like making voice calls available from within Outlook, Instant Messenger, or hosted apps like customer service centres?



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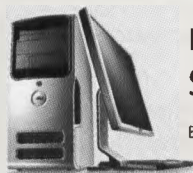
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HOSTED VoIP

VoIP providers have also cottoned onto the idea of hosting voice switching offsite, in effect reducing the cost of an advanced IP PBX by sharing it with many customers. You pay for the service, but it means you don't have to install the hardware in your premises, and you don't need certain expertise in setting up a PBX. In this scenario, call routing becomes quite advanced. You make the calls, the decisions about how they get routed are made off-site.

Examples include AAPT's Hosted Voice service and hosted services from Brennan IT, to name a couple. In these situations, you might pay regular rental bills on top of your call charges.

example, "we put a guarantee in place that the voice quality be as good as [their PSTN telephone service] or they can cancel the contract and move to an alternative service," says McGrory.

WHAT HARDWARE DO I NEED?

You might be thinking, "doesn't my hardware get supplied anyway by my VoIP service provider?" That's true — for very small offices you might sign up with a provider who'll supply the hardware, or you might buy hardware bundled with a service. Or, you might buy VoIP hardware and sign up with a provider separately (providers like MyNetphone). But the options multiply for a business with several lines, or even a remote office. There are many routes to VoIP here, but

the major issue revolves around cost and your level of, or lack of, switching "smarts", and how much money you can spend to connect that switching to VoIP. You might be retro-fitting VoIP hardware to an existing system (cheaper) or replacing an ageing PABX with a VoIP-capable IP PABX (more intelligent features, but could be more complicated or expensive).

For a business on a tight budget, replacing phones and switches with VoIP hardware simply might not be an option. Fortunately, it's possible to plug in VoIP as your budget allows. For the sake of explanation, we'll simplify this to a couple of basic scenarios.

BASIC SETUP — VOICE GATEWAYS
Impressively, it's possible to add

VoIP as an "add-on" to an existing small telephone system without replacing any handsets, PABXs, or changing your phone number. The key is a product generically known as a voice "gateway".

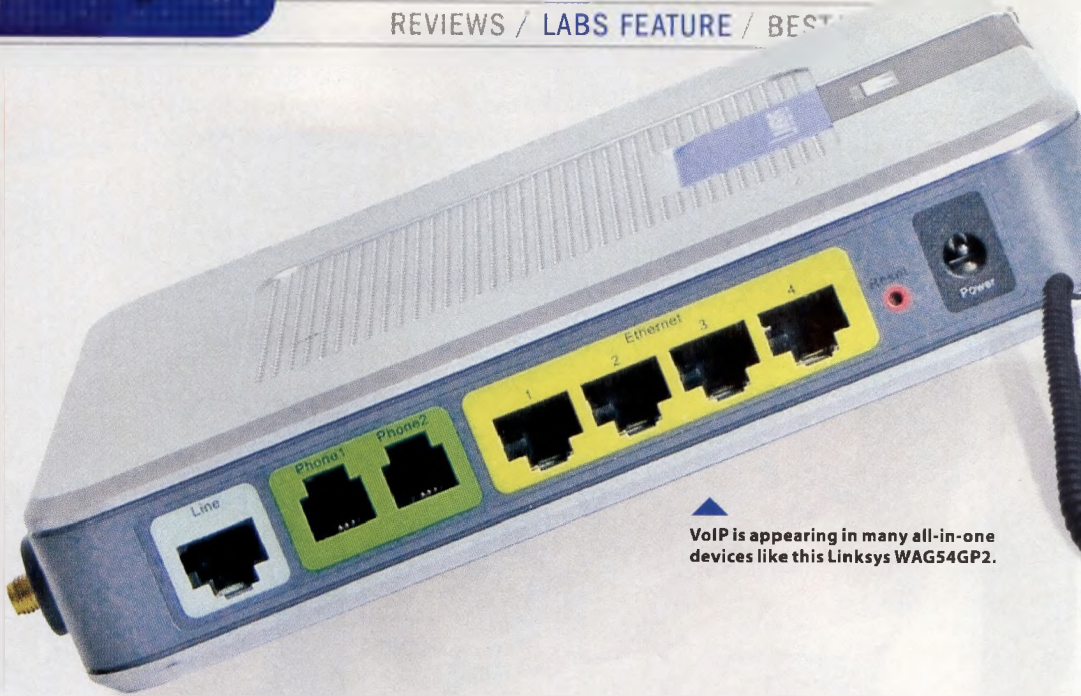
Voice gateways are the answer to VoIP for small businesses with several telephone lines who don't want a huge hardware bill (or to risk the business if their internet goes down). Starting from under \$1,000, the box comprises a number of FXS ports (the lines from your phones). The gateway connects those lines to your broadband and your VoIP provider, so that you can make calls over the internet.

Gateways such as the Netcomm SmartVoice v431 also have an FXO port (see page 66), meaning that

they can also route the calls over the regular phone lines (called PSTN). Why is this a good thing? This way, you keep your existing phone lines, or reduce the number if you like — you still pay line rental, but you keep your phone numbers, and you have a backup if the VoIP system goes down.

For a small office with a bunch of rented phone lines, a voice gateway also functions as a substitute phone system. "It acts as a mini-PABX if you like," says Netcomm's Rochelle White. "It can do call hold, call transfer and call waiting."

Voice gateways can also plug VoIP capability into a small PABX (private automatic branch exchange — a local switching system linking an office full of phones to the outside telephone



VoIP is appearing in many all-in-one devices like this Linksys WAG54GP2.

BUSINESS vs CONSUMER-GRADE VoIP

Feature	Business VoIP	Consumer VoIP
Network access	Low contested broadband link, or private IP network	General internet
Service guarantees	Guaranteed voice quality, response and repair times, network availability, latency.	Reasonable care to ensure service, and prompt repair of faults.
Voice switching	Advanced — multi-line call switching, call hold/forwarding, auto-attendants, programmable.	Basic — call waiting, voicemail, call forwarding, number blocking.
Hardware	Multiple-lines, voice gateways, IP PBX/PABX.	Single or dual-line, all-in-one modem/adaptors.

BUSINESS VoIP — KEY HARDWARE



IP PHONE

What is it?

VoIP-capable phone, which can be plugged directly into LAN to make VoIP calls. No extra VoIP adaptor required.

Features:

The D-Link DPH 120S pictured here is an entry-level SIP-protocol phone with two RJ-45 ports: one for connection of phone to network router or DSL modem; the other a pass-through connection for internet traffic to a PC. Packet prioritisation places importance on voice traffic. The IP Phone is assigned an IP address and must be configured for VoIP provider, though similar phones can be supplied pre-configured. Key features include supported voice codecs which determine voice quality, and Power Over Ethernet (PoE), which negates the need for a power adaptor.

Price:

\$194 (with bundled VoIP credit)



IP PBX

What is it?

Advanced telephone switch designed for VoIP. No secondary voice gateway required to channel voice calls over internet to VoIP provider.

Features:

The Linksys SPA9000 pictured here can connect four SIP-compatible IP Phones (not regular analogue handsets) or up to 16 with upgrade. Two FXS ports are provided for connection of analogue handsets or faxes. Works with any SIP-compatible IP Phone, but includes advanced features such as group paging, hunt groups, and shared lines (when used with Linksys IP Phones).

Price:

\$620



VOICE GATEWAY

What is it?

Connects existing PSTN telephone handsets and switches to VoIP service.

Features:

The Netcomm Smartvoice V431 pictured here includes three FXS ports for connection of analogue telephone handsets or fax machines, or an existing telephone switch (PBX). A single FXO port allows pass-through to PSTN, so calls can be made and received via a regular non-VoIP telephone service if necessary. It functions as a mini-PBX, with support for up to 100 extensions, with call hold, call wait and call transfer.

Price:

\$726



ANALOGUE TELEPHONE ADAPTOR

What is it?

Basic connection from analogue telephones to IP network for VoIP calls, but functions increasingly being integrated into other devices. None or fewer routing features of gateway or IP PBX.

Features:

Essentially business adaptors offer less switching capability than fully fledged voice gateways — the Linksys SPA 2102 pictured here, for example, has two FXS ports for analogue phones and two Ethernet ports. No outside FXO connection for regular phone calls.

Price:

\$139.95

network). The phone network within the building stays the same, except that the PABX is connected to the gateway, offering an extra set of outgoing VoIP lines via broadband. There are some restrictions — at the time of writing Netcomm's SmartVoice box only connected to analogue PABXs. Also some expertise is required — a technician must configure the PABX routing table to route the traffic over the VoIP gateway.

Again, the advantage is that you're not replacing phones, or switching equipment. "It's adding the functionality of VoIP, without replacing the current telephony handset and the PABX and the switchboard. You can keep your published number," White says. Brands of voice gateways include Netcomm, Linksys, Quadro, Quintum and others.



THE ADVANTAGE IS THAT YOU'RE NOT REPLACING PHONES OR SWITCHING EQUIPMENT — BUT ADDING THE FUNCTIONALITY OF VoIP

ADVANCED — IP PBXs

Switching systems with IP built-in provide the sorts of fancy options you usually see in large corporates — things like auto-attendants, shared lines, three-way voice conferencing. Some offer the ability to turn segments of your office into an overflow call centre for busy periods (and call forwarding). Also, you benefit from not needing existing telephone wiring, so you can save by switching to a single data/voice cabling system.

With an IP PBX you connect IP phones directly, and calls go to your VoIP provider directly via your

broadband router; there is not necessarily a secondary gateway box. There's a big range, including Panasonic, Epygi, Shortel, Avaya, Nortel, Linksys and many others. Entry-level systems can be bought for around \$600.

The Linksys SPA9000 is one example that's been reviewed in APC before. It can connect four IP Phones (SIP protocol), though is upgradeable to 16 ports, and has two FXS ports for connection of faxes or regular phone handsets. It also supports several algorithms for different voice quality, including G.711 and G.723.1. Some systems like the

Panasonic KX-TDA30AL allow for up to 52 handsets.

Once you've installed an IP PBX, you can really think of your phones as being on a giant network, even if they're not in the same building. In fact, you can make calls over the system from one location to another, without paying long distance. The idea is free calls between offices. This is called "toll calling" and is a key feature of VoIP that can save you money.

This is an important factor in business VoIP, the ability to add pieces of the puzzle one at a time. It's possible to save on long distance calls even if you don't

THE VoIP SYSTEM IN A PC

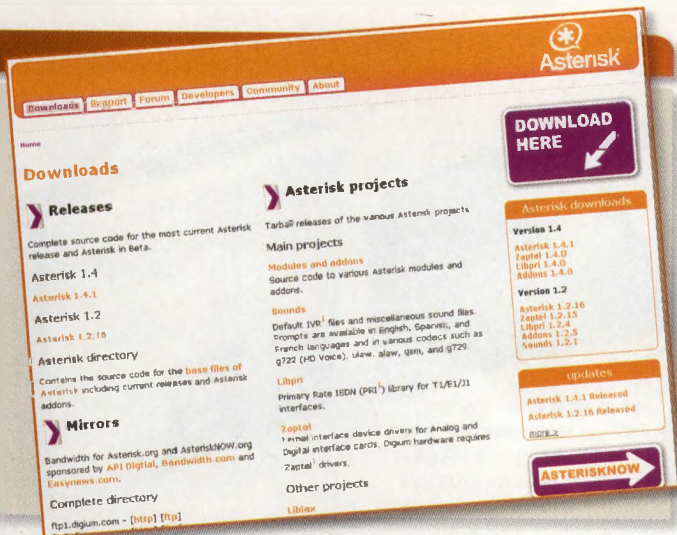
An emerging force in the VoIP arena is Asterisk VoIP software, which can be used to build a PBX in a PC. It's radically different from other VoIP boxes, because you can use off the shelf PC hardware, and the hype is that it brings Cisco-level features down to small offices at a fraction of the price.

The software is free (you can download it from www.asterisk.org/downloads) and supports Mac OS X, Linux, FreeBSD and more. While Asterisk is free, a mini-industry of commercial vendors has sprung up, offering everything from Asterisk

integration and installation—and branded Asterisk-based PBXs such as Switchvox.

Digium, the company that's behind the Asterisk development effort, sells the official Asterisk Business Edition, which comes with support packages. Asterisk Business supports 40-240 simultaneous calls and features are similar to any IP PBX, including voicemail, voice menus, IVR and conferencing.

Links: www.asterisk.org/, www.digium.com, <http://www.asteriskit.com.au/>, www.australianasterisk.com.au.



have a VoIP provider. We know of one major company that has rolled out Cisco IP Phones on staff desks, connected via the corporate LAN, but external calls revert to the regular telephone network once they leave the company.

Unlike some branded telephone VoIP adaptors for home, IP PBXs have the advantage of being fully configurable, and they should work with most VoIP services. Keep in mind, there are some compatibility issues between brands of IP Phones and PBXs due to the standards and features used.

For example Avaya's IP Phones are designed to work with Avaya's H.323 codec switch, not a SIP switch (though the company is building in SIP support in its



UNLIKE SOME BRANDED TELEPHONE VoIP ADAPTORS FOR HOME, IP PBXs HAVE THE ADVANTAGE OF BEING FULLY CONFIGURABLE

products). On a non-compatible, non-Avaya switch, the phone won't get advanced display features like visual voicemail indicators. You can take it over to a Cisco switch, and it may connect and give you a dial tone, but according to Avaya you won't get these extra features the phone is designed for.

THE FUTURE: UNIFIED MESSAGING

The other side of this story, which we don't have room to cover in detail here, is unified messaging. By moving to a pure IP PBX, you can

start to integrate voice calls with data. It sounds confusing, but it means adding applications that integrate voice communications by talking to your IP PBX. Avaya IP Office, for example, lets people make voice calls as well as type messages, all from within instant messaging-type apps. Microsoft's Unified Communications Server (not released at time of writing), when used in conjunction with Exchange 2007, lets people access their voicemail from their Outlook inbox. **ETC**

LOOK FOR THIS

An FXO port is a key feature to look for with any VoIP hardware, whether it be a home office broadband/router/VoIP box, or a business gateway. An FXO port gives you an outgoing connection to the PSTN (or non-VoIP) telephone network. In a nutshell, it means that if VoIP goes down, you can still make phone calls.



Done the right way, VoIP has the potential for massive cost savings for business, as well as providing you with advanced features.

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**Note: Products were tested in an outdoor environment. Actual speed and distance will vary depending on interference, network traffic, building materials, and other conditions. Range and speed is determined using a Belkin N1 Wireless Router (F5D8231au4) and an N1 Wireless Notebook Card (F5D8011au) or N1 Wireless USB Adapter (F5D8051au).

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Best Tech is edited by William Maher. Contributors to the APC Best Tech guide: Seamus Byrne, Ashton Mills, Nick Race, Tony Sarno, Adam Turner, Dan Warne, Chris Zammit and Stephen Withers.

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The **Best Value** award is for those which offer a good combination of features for a reasonable price.



The **Best Overall** award is for products we believe are the best, regardless of price.

DESKTOP PCS – GENERAL USE

Enspire Digital Vitesse XP2

CONTACT Enspire Digital
ONLINE www.enspiredigital.com.au
PRICE \$2,687 (our spec)



We specced this machine on the Enspire site, with the right mix of features for work and play. Under the hood is Intel's flagship Core 2 Duo E6600 (2.4GHz) with 1GB of RAM, a Samsung 19in 8ms screen and GeForce 7600GT graphics card. Classy touches include the Logitech MX3000 Cordless Desktop set and 5.1 speakers.



DESKTOP PCS – BUSINESS

Dell OptiPlex 745 mini tower

CONTACT Dell
ONLINE www.dell.com.au
PRICE \$1,635.70 (our spec)



With Intel's new Core 2 Duo onboard, this represents the top of the line in a business computing platform. Key features include a Core 2 Duo E6300 (1.8GHz) chip, 1GB DDR2 RAM, a 160GB Serial ATA hard drive, and 3-year next-business-day on-site warranty. Price includes 17in LCD monitor.



MOTHERBOARDS

ASUS P5N32-E SLI motherboard

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$379 (P5N32-E SLI); \$349 (SLI)



Motherboards based on Nvidia's 680i chipset are the bees knees for enthusiasts. The P5N32-E SLI includes two 16x PCI Express lanes for Nvidia cards in SLI configuration, support for Core 2 Extreme, Core 2 Duo and Socket 775 processors, automatic overclocking of RAM, and 1,333MHz FSB future processors from Intel.



PC Quest M2 Core

CONTACT PC Quest
ONLINE www.pcquest.com.au
PRICE \$1,510 (our spec)



When it comes to cheap, do-everything machines, there's a lot of rubbish out there from the big brands. Not so with PC Quest. This system has a dual-core Athlon 64 X2 3800+ on AMD's new AM2 platform, plus 1GB of RAM and a 19in LCD. Also, the ATI Radeon x1600 Pro is a capable card for occasional gaming.



Dell Dimension C521

CONTACT Dell
ONLINE www.dell.com.au
PRICE \$1,155 (our spec)



As cheap as anything you'll find with dual-core (though you'll get cheaper with P4), we managed to spec the C521 with an Athlon 64 X2 3800+, 1GB RAM, a 19in LCD and 80GB HDD. The weak point is the integrated graphics: Vista-compliant, but you'll need to turn off the eye candy.

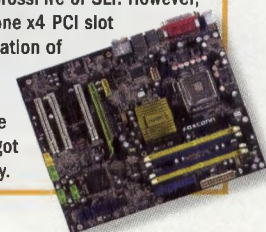


Foxconn P9657AA-8KS2H

CONTACT Foxconn
ONLINE www.foxconnchannel.com
PRICE \$165



This board only has a single x16 PCI Express slot, so it can't be used for CrossFire or SLI. However, it also has one x1 and one x4 PCI slot ready for the next-generation of PCI-E expansion cards. Combine this with HD audio, five SATA and one eSATA port and you've got top value for your money.



VIDEO CARDS

MSI GeForce 8800 GTS 320MB

CONTACT MSI
ONLINE www.msicomputer.com.au
PRICE \$479



There is a pretty big difference between the GTX and the GTS models on paper, but the performance of the much cheaper GTS is still rock-solid. Testing in F.E.A.R. and Quake 4 had the card singing — the GTS 320MB version never slowed or shuddered, even with the system-killing 16xAA turned on.



Nvidia GeForce 7600 GT

CONTACT Nvidia
ONLINE www.nvidia.com
PRICE Approx. \$210



Nvidia's mainstream card, the GeForce 7600 GT raises the bar for price compared to performance. With significant performance boosts over the last-generation 6600 GT card, the 7600 GT also comes with support for SLI, allowing performance to spiral even higher.



LCD MONITORS

HP w1907

CONTACT HP
ONLINE www.hp.com.au
PRICE \$549



It's not the 24in Dell behemoth we featured last month, but for most people this 19in model is probably a better fit. It was our pick of the glossy screens in this month's LCD monitor roundup (see page 52), with a bright, crystal clear screen, and less of the darkened corners seen in some rivals.



BenQ FP71G+

CONTACT BenQ
ONLINE www.benq.com.au
PRICE \$329



Proof that good things do come in small packages, this 17in LCD screen manages to remain at a low price point while still delivering an 8ms response time. There is no DVI, but this 1,280 x 1,024 monitor will definitely satisfy most run-of-the-mill computing jobs with ease.



OPTICAL DRIVES — DVD

ASUS DRW-1814BLT DVD writer

CONTACT ASUS
ONLINE www.asus.com.au
PRICE \$79



Finally, a retail SATA optical drive! This is a premium drive, running at 18x DVD±RW writing, 8x DVD±R Double Layer and 48x CD writing. Interestingly, it's only rated to read DVDs at 16x (slower than it can write to them). In the box, you get a couple of blank LightScribe-compatible discs, and Nero 6 OEM.



Pioneer DVR-A11XLA

CONTACT Pioneer Electronics
ONLINE www.pioneer.com.au
PRICE \$99



Now into its 11th-generation release, this DVD burner is a steal for only \$99. Industry-leading NERO 7 Essentials burning software is included and the drive itself offers a zippy 16x burn speed. The Pioneer drive is an excellent upgrade for an ageing system and a very solid alternative to Sony's model.



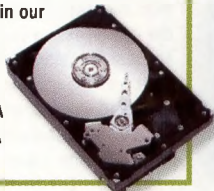
INTERNAL HARD DISKS

Seagate Barracuda 7200.10 750GB

CONTACT Seagate
ONLINE www.seagate.com
PRICE Approx. \$980



It may not be on the shelves when this issue of APC hits the streets, but it won't be too far off. This 750GB whopper scored well in our benchmarks and — just think about it — you only need two of these for 1.5TB of storage! It's available in PATA and SATA, but who uses PATA these days?



Seagate Barracuda 7200.10 320GB

CONTACT Synnex
ONLINE www.synnex.com.au
PRICE \$225



It's quiet and packs plenty of punch, but be careful in tight enclosures: it's hot. Though the RRP for this drive is \$225, they can be found on the street for less than \$200. The 16MB cache model is fast enough for most uses, but if you're serious about video editing, splurge for a 10,000rpm drive.



EXTERNAL HARD DISKS

LaCie Bigger Disk Extreme 2TB

CONTACT LaCie
ONLINE www.lacie.com/au
PRICE \$1,695



So your friend has been boasting about their 1TB external like it's the bee's silicon knees? Pfft — LaCie's latest release packs 2TB into a single device, tossing in three different interface options of FireWire 400, FireWire 800 and USB 2.0. As far as external drives go, it doesn't get bigger than this. For now anyway.



Maxtor Basics Personal Storage 3200

CONTACT Maxtor
ONLINE www.maxtor.com
PRICE \$249



While the extra "0" on the name of this product was probably a very expensive marketing initiative, the actual size of the external drive is 320GB, which is a good deal for the price. Our previous entrant here was a 250GB drive for a tad near \$300, so this is more space for less money.



USB ULTRA-PORTABLE

Lexar Jumpdrive Lightning

CONTACT Lexar
ONLINE www.lexar.com.au
PRICE \$79.95 (1GB)



This ultra-quick Lexar functions like any other memory key, but includes a PowerToGo feature — you can install apps to the drive that can be run on any PC. It doesn't make any changes to the host OS and stores files locally on the key, so you can take it all with you when you leave; ideal for students or support staff.



Sandisk Cruiser Micro

CONTACT Sandisk
ONLINE www.sandisk.com
PRICE \$47 (1GB)



Sandisk's Cruiser Micro top-notch. The simple design includes a retractable USB connector and ships with a lanyard. The key includes the U3 software platform that allows users to install custom apps — just like Lexar's PowerToGo feature. It's a touch slower than its competitor, but it's also \$20 cheaper for the 1GB capacity.



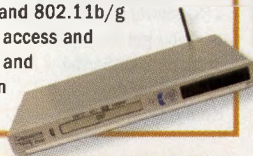
MEDIA ADAPTORS

Zenasonic Z500 HD Network DVD

CONTACT Zenonic
ONLINE www.zenonic.com.au
PRICE \$569



If you want to get your digital media from the study to the lounge room, the Z500 can handle anything you throw at it. It's a progressive-scan MPEG4/DVD player with HDCP-compatible HDMI, plus built-in Ethernet and 802.11b/g for streaming internet access and playing music, photos and movies from any PC on your home network.



Mediatek MG-350HD

CONTACT Anyware Computers
ONLINE www.anyware.com.au
PRICE \$399



The Mediatek MG-350HD is one of the simplest ways to get high-definition action into your lounge room (up to 1,080p resolution). Whack a desktop hard drive inside and the Mediatek plays just about any audio, video or image file you care to throw at it – from the drive or via Ethernet or Wi-Fi.



NAS / SMALL BUSINESS

Adaptec Snap Server 210

CONTACT Adaptec
ONLINE www.adaptec.com
PRICE \$2,152 (500GB) inc. software



Unlike big rack-mounted enterprise NAS systems, Adaptec's Snap brand has focused on the smaller end of town. This design has either 500GB or 1TB of networked storage. What sets it apart is the award-winning GuardianOS, giving you features previously reserved for big business.



Adaptec Snap Server 110

CONTACT Adaptec
ONLINE www.adaptec.com
PRICE \$999 (160GB) inc. software



Cheaper than the Snap Server 210, this model gives you a business-class network storage box with a single drive (160GB to 500GB) of space on a Gigabit Ethernet connection. Designed to be fast, it incorporates features like block and file date on the same server, plus integration with Windows, Linux, Unix and Apple.



SERVERS – SMALL BUSINESS

PowerEdge 2900

CONTACT Dell
ONLINE www.dell.com.au
PRICE From \$3,487



This Dell is a beauty. It's dual-socket, dual-core and sports up to two of the new Intel Woodcrest Xeons. The default config features a single Xeon 5140 at 2.33GHz with 1,333MHz FSB, backed by 2GB of DDR2 533 FB DIMMS and an 80GB SATA II hard drive. Dell offers a 3-year on-site warranty on this highly upgradable server.



HP ProLiant ML110 G3 SMB Bundle

CONTACT HP
ONLINE www.hp.com.au
PRICE \$1,499



Not a real powerhouse, but the price can't be beaten. This unit is a single CPU Pentium 4 3.0GHz with 1GB of RAM and two 80GB hard disk drives. Though it won't break any speed records, it will suit a small business's needs. The server is bundled with Microsoft Small Business Server 2003 Standard Edition.



NOTEBOOKS – MEDIA CENTRE

Toshiba Qosmio G30

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
PRICE \$5,499



Toshiba and Sony have been battling it out for a while now, and now the Qosmio and Vaio VGN-AR behemoths have been updated. Based on the new specs, we can't go past the new Qosmio G30 for sheer outright luxury. Why? The G30 now has the advantage in a few key areas, including 320GB, 2GB of RAM and Nvidia GeForce Go 7900.



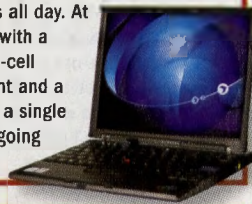
NOTEBOOKS – BUSINESS

Lenovo ThinkPad X60

CONTACT Lenovo
ONLINE www.lenovo.com.au
PRICE From \$2,949



Business is all about portability – after all, there's no point having a notebook if you're hopping between power points all day. At 1.67kg and shipping with a better than average 8-cell battery, the X60's eight and a half hour run-time on a single charge will keep you going all day long.



NOTEBOOKS – ULTRAPORTABLE

Toshiba Libretto

CONTACT Toshiba
ONLINE www.isd.toshiba.com.au
PRICE From \$3,499



You had better make sure to look closely when shopping for a notebook or you might miss this one. At just 7.2in, the display is tiny (and the keyboard matches). Don't be fooled by the chassis though, there's plenty of grunt inside (and you can throw it into your backpack with room to spare).



Acer Aspire 9425WSMi

CONTACT Acer
ONLINE www.acer.com.au
PRICE \$2,699



This Acer doesn't have a TV tuner, but it's cheaper than the ASUS it replaces, and comes with 2GB RAM. It's an ideal Vista notebook, with a 17in wide-screen, Core 2 Duo, plenty under the hood and a decent battery life. Graphics are powered by an Nvidia nForce Go 7300 (using 236MB TurboCache, not discrete graphics).

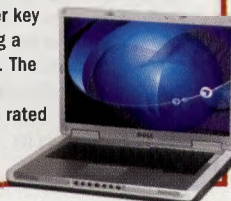


Dell Inspiron 6400

CONTACT Dell
ONLINE www.dell.com.au
PRICE From \$1,329



It's impressive seeing Intel's Core Duo platform in a mid-sized package under \$1,500. Dell hasn't skimped heavily on other key features either, including a 15.4in wide-screen LCD. The 6400 will play and burn DVDs, and battery life is rated for three hours. Weight starts at 2.8kg.

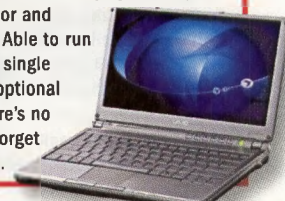


Sony VGNTX27GPT

CONTACT Sony
ONLINE www.sony.com.au
PRICE \$3,699



This is the bigger brother of the TX17GP. Here in the APC Labs we were blown away by its crisp display, tiny form factor and excellent battery life. Able to run over eight hours on a single charge (and with an optional extended battery, there's no need to worry if you forget to pack your charger).



SMARTPHONES

BlackBerry 8707G

CONTACT Optus
ONLINE www.optus.com.au
PRICE \$999 outright (or plans)



This new BlackBerry has the basics perfected. A big, bright screen, fine-tuned QWERTY keyboard, 3G wireless that can also be used as a laptop modem and the BlackBerry email service. Once you get the hang of the keyboard shortcuts, you can whip around the 8707G's interface like lightning.



Nokia E61

CONTACT Nokia
ONLINE www.nokia.com.au
PRICE \$749



It's hard to fault Nokia's 3G "BlackBerry Killer": it has the comfortable BlackBerry form factor along with a QWERTY keyboard and fits comfortably in your pocket — plus, you can take your pick of push email service. There are two other killer features: inbuilt Wi-Fi and Nokia's new web browser.



MULTIFUNCTION — HOME

Canon Pixma MP830

CONTACT Canon
ONLINE www.canon.com.au
PRICE \$549



The MP780's successor, the MP830 soundly beats the competition. It can print photo-lab-quality 4 x 6in home snaps and has all the gear needed by a home office, such as a copier, scanner and G3 fax machine (together with an automatic 35-page document feeder and duplexing ability).



Lexmark X5470

CONTACT Lexmark
ONLINE www.lexmark.com.au
PRICE \$249



This Lexmark is probably the first attempt to create a multifunction printer that actually looks stylish. On top of that, the machine also performs well, with print speeds up to 25ppm black and 18ppm colour, a 10-sheet automatic document feeder, plus PC-free photo, fax and copy capabilities.



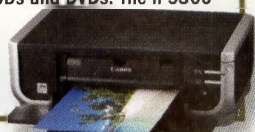
PRINTERS — HOME

Canon PIXMA iP5300 Bubble Jet

CONTACT Canon
ONLINE www.canon.com.au
PRICE \$249



This is the perfect all-rounder for the home. It prints high-quality photos and churns through mono text documents at speeds of up to 31ppm, with quality approaching that of a laser. It can also print directly to CDs and DVDs. The iP5300 will deal with school projects, digital photos, documents, anything!



Epson Stylus C79

CONTACT Epson
ONLINE www.epson.com.au
PRICE \$89



This is a cheap and cheerful printer that still delivers good results. With its four separate ink cartridges and extra-fine printing, it marries good print and photo quality with print speeds of up to 22ppm (black text) and 12ppm (colour). Be aware that your main ongoing cost will be the ink.



PRINTERS — SMALL BUSINESS

OKI C3400 LED Laser

CONTACT OKI
ONLINE www.oki.com.au
PRICE \$878



Essentially a high-performance colour laser for just over \$800. The OKI C3400 surpassed all the other sub-\$1,000 lasers in our last Labs Challenge in print speed and quality because it uses slightly different LED laser technology. Consumable costs are slightly higher because the toner cartridges only do 1,000 pages, but it's a top performer.



Lexmark E120n

CONTACT Lexmark
ONLINE www.lexmark.com.au
PRICE \$188



The outstanding value of this package sent the APC office into raptures. The E120n is a 20ppm mono laser printer, with an Ethernet print server built in, for only \$188. Connect it to your ADSL modem/router and you can print wirelessly from anywhere in the house. Cartridges are not expensive either.



MULTIFUNCTION — BUSINESS

EPSON AcuLaser CX11NF

CONTACT Epson
ONLINE www.epson.com.au
PRICE \$1,499



This colour laser multifunction printer won three of the six tests thrown at several MFPs in APC's Labs Challenge. Has good copy and scan speed, and does a great job with plain paper, where its fine detail and accurate colour impressed the judges. It can really replace your office printer, copier and fax machine.



Brother MFC-8860DN

CONTACT Brother
ONLINE www.brother.com.au
PRICE \$1,199



A mono (rather than colour) laser, this still has all the components to make it a powerful office or small department performer — such as a 28ppm network laser printer, a copier and a scanner with built-in duplexing, as well as LDAP capability (for accessing directory services). A great all-rounder for the price.



ADSL2+ MODEM/ROUTERS

Dynalink RTA1025W

CONTACT Dynalink
ONLINE www.dynalink.com.au
PRICE \$179



This modem is a bargain at \$179. It performed well in our ADSL2+ and wireless tests and was also a strong performer in Annex M tests. The only area for improvement is long-range wireless, where the 1025W only managed 800Kbit/s, but this won't be a significant concern for most people.



Dynalink RTA1046VW

CONTACT Dynalink
ONLINE www.dynalink.com.au
PRICE \$279



Performance is nearly as good as the 1025W, but for your extra \$100 you get two inbuilt VoIP ports for you to connect standard phones to and make two calls at the same time. And if you want the fastest possible modem at 1KM, this is it: 19.85Mbit/s.



WIRELESS APs & ROUTERS

Linksys Wireless-N WRT300N

- CONTACT Linksys
- ONLINE www.linksys.com.au
- PRICE \$279.95



We're still not overly convinced that Draft N devices are the best devices in the long term, but if you want more speed for now, at least it gives you a chance of compatibility between brands and some hope of a firmware upgrade further down the track. The WRT300N has the best range among the Draft N routers we've tested so far.



TP-Link TL-WR541G

- CONTACT Anyware
- ONLINE www.anyware.com.au
- PRICE \$75



In our tests the TL-WR541G delivered solid connections at the same range as routers costing much more. It has the usual four-port 10/100 Ethernet switch plus regular features such as a (relatively simple) firewall, access controls, WPA2 authentication, DHCP and port triggering.



VOIP ADAPTORS

Netcomm V300

- CONTACT NetComm
- ONLINE www.netcomm.com.au
- PRICE \$199



Low upstream speeds on most broadband connections mean QoS support makes a big difference to how you sound during a VoIP call. In APC's testing, the V300 delivered good voice quality with minimum impact on data traffic. It also lets you use one handset for VoIP and PSTN calls.



Netcomm V100

- CONTACT NetComm
- ONLINE www.netcomm.com.au
- PRICE \$128



Connect the V100 to a power point, your network and a handset, and you're in business. Available as a generic model or preconfigured for certain VoIP providers, which makes it as simple as it gets. Some people prefer a box that allows more fiddling around with configurations, but we're attracted to the simplicity.



GPS DEVICES

Garmin Nuvi 660

- CONTACT GME
- ONLINE www.gme.net.au
- PRICE \$1,199



As a sat-nav, the Nuvi 660 is the cream of the crop. Stellar 4.3in wide-screen, large buttons and a user-friendly interface make it a breeze to use, and the main navigation screen is clear and uncluttered. Acquiring a GPS signal is speedy thanks to the flip-up antenna, and correcting wrong turns is also snappy.



Navman N40i

- CONTACT Navman Australia
- ONLINE www.navman.com
- PRICE \$899



The N Series takes up the NavPix "image-based navigation" theme and delivers it in an even smaller package. Compared to the N60i it has a smaller colour touchscreen and less flash memory. But, with an RRP of \$899, it has to be one of the best value GPS in-car units on the market today.



DIGITAL STILL CAMERAS

Canon IXUS 800IS

- CONTACT Canon
- ONLINE www.canon.com.au
- PRICE \$649



The IS in this IXUS is for image stabilisation, but the rest of this package is really hard to beat too, with a great range of shooting modes and image settings. The Canon 6MP CCD delivers superb imaging quality. A 4x optical zoom is excellent at this price.



Canon PowerShot A450

- CONTACT Canon
- ONLINE www.canon.com.au
- PRICE \$199



This camera delivers all the power of Canon's DIGIC II image processor at a seriously good price. 5MP, 3.2x optical zoom, movie mode, one-touch download/print and a 2in LCD. No fancy shooting modes, but that makes it even better for anyone who just wants to point and click.



DIGITAL VIDEO CAMERAS

Panasonic AG-HVX202EN

- CONTACT Panasonic
- ONLINE www.panasonic.com.au
- PRICE \$9,900



The first of the next-generation pro-grade cameras (and inside \$10K). Record in DV or various DVCPR formats, with support for 720p and 1080i HD. With support for DV tape and the new P2 flash media format, as well as pro audio features and new lensing technology, this is nova hot right now.



Hitachi Hybrid DZ-HS301

- CONTACT Hitachi
- ONLINE <http://aus.hitachi.com.au/>
- PRICE \$1,449



This is a DVD/HDD combo cam. Hitachi's new hybrid gives you more control over video quality and greater recording times, with up to three hours at DVD quality and six at "standard". You also get in-camera editing before you output to disc, making it perfect for those fearful of editing on a PC.



PROJECTORS

Optoma HD72

- CONTACT Amber Technology
- ONLINE www.ambertech.com.au
- PRICE \$4,750



Optoma's outstanding DLP-based projector offers full 720p HD resolution for less than \$5,000. The 3.1kg unit produces a clear, consistent image with controls to adjust brightness, contrast, image shift and keystone, through dedicated buttons on the remote control. This helps the viewer adjust the image to match each movie.



Dell 1800MP

- CONTACT Dell
- ONLINE www.dell.com.au
- PRICE \$1,398.10



Meet the Dell 1800MP, a DLP machine with XGA resolution and brightness of 2,100 lumens. Its 1,024 x 768 resolution and contrast ratio of 2,000:1 are generally found on higher-priced projectors. Downside? Slightly louder fan (36db) and butt-ugly design, but who cares when it comes at this great price?



TV TUNERS

Compro VideoMate T750

CONTACT Anyware
ONLINE www.anyware.com.au
PRICE \$149



With pockets of poor digital reception, we're still inclined towards combo analogue/digital tuners. The T750 provides digital and analogue, composite/S-Video capture, FM radio tuner (with MP3, WAV and WMA recording), remote control and Compro's capable software. We especially like its ability to power up and shut down by remote or before/after recording.



Compro VideoMate U500

CONTACT Anyware
ONLINE www.anyware.com.au
PRICE \$99



The Compro VideoMate U500 is a USB dongle, so you can use it with desktops or notebooks (but you may need a better antenna than the one included in order to receive all channels). Scheduled recording is easy enough to set up, plus it's possible to record directly to a DVD or an ISO.



PERSONAL VIDEO RECORDERS

Topfield TF6000PVRt

CONTACT Topfield
ONLINE www.topfield.com.au
PRICE \$1,249



The addition of Wi-Fi provides wireless downloads of electronic program guides from IceTV, allowing you to record TV shows by name rather than timeslot. This Topfield has dual digital tuners and a 200GB hard drive (was 160GB). It's also now easier to copy files off the unit for playback on your PC.



Foxtel iQ

CONTACT Foxtel
ONLINE www.foxtel.com.au
PRICE \$14.95/mth



Admittedly, the 160GB Foxtel iQ sits awkwardly in the category of PVRs, because it's inextricably tied to Foxtel's Pay TV service. But if you do happen to be a Foxtel subscriber, the 160GB iQ is absolutely worth the money. Foxtel has removed the upfront fee, so it's now just \$14.95 a month.



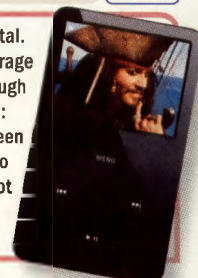
PORTABLE MUSIC PLAYERS

iPod 80GB

CONTACT Apple
ONLINE www.apple.com.au
PRICE \$499



Now this is getting really mental. Truly an insane amount of storage (20,000 songs), which is enough to knock Creative's Zen Vision: off the top of our list. The screen is now brighter and gives up to 20 hours of battery life. It's not cheap, but yet again, Apple's iPod is the best.



iPod shuffle 1GB

CONTACT Apple
ONLINE www.apple.com.au
PRICE \$119



We're not turning into iPod fanboys, but for RRP value we still can't go past the shuffle, which has had a design overhaul and a price cut. It's now so small that fashion models must use their fingertips to hold it in press photos. 1GB of memory gives you up to 240 songs.



HD TVs

Sony Bravia KDL40X2000

CONTACT Sony
ONLINE www.sony.com.au
PRICE \$5,499



The Bravia is set apart from the competition by its signature styling, featuring a "floating glass" design — this screen looks expensive, and it is. This is full HD resolution of 1,920 x 1,080, unlike some cheaper value screens (see Acer's value range). For the price, you're also getting an integrated HD digital tuner and 2 HDMI inputs.

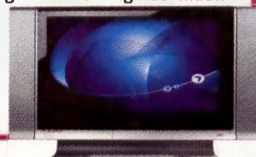


Acer AT3705-DTV

CONTACT Acer
ONLINE www.acer.com.au
PRICE \$2,899



Sure, this high-definition television isn't a traditional audio-visual brand, but Acer are definitely good value for money. For less than \$3,000 you're getting a 37in full high-definition resolution (1,920 x 1,080) LCD screen including analogue and digital TV tuners.



IT'S THE FASTEST WAY TO FIND THE BEST PC GEAR IN AUSTRALIA!

APC's Best Tech list is now online at
www.apcmag.com/BestTech

We got sick of our neighbours/brothers/cousins bugging us for info about the best gear to buy, so now we're posting it all online: our favourite killer products across 50 categories.

Get all our inside tips on the best notebooks, LCD TVs, modems, printers and more.

\$0 BROADBAND SETUP

WITH 18 MONTH CONTRACT

ADSL2+



24Mbps technology[#]

\$29.99
From MONTHLY INC. GST

Plan	Xlite	Light	Medium	Heavy	Premium Plus	15GB with VoIP
Monthly Download Quota	600MB~	3GB*	18GB*	30GB*	100GB*	15GB*
Shaping (kbps)	64/64	64/64	128/128	128/128	256/256	128/128
Monthly Charge	\$29.99	\$39.99	\$49.99	\$59.99	\$129.99	\$49.99

The theoretical maximum download speed of ADSL2+ is 24Mbps. Actual speeds may be lower due to a number of factors including distance from your local telephone exchange, network configuration and traffic, the quality of customer copper phone line, EMI, cabling and equipment. About 80% of TPG's ADSL2+ customers are currently accessing download connection speeds of between 5Mbps and 24Mbps. ~600MB free, then 15c/MB, max download charge \$30; speed shaped when 10GB is reached. *Speed shaped when monthly download quota is reached. Total minimum cost over 18 month contract term for Xlite plan is \$539.82 (includes \$0 setup but excludes modem cost). Prices subject to change without notice. Check TPG website at www.tpg.com.au for Full terms and conditions. TPG Internet Pty Ltd 65 Waterloo Rd. North Ryde NSW 2113. ABN 15 068 383 737.



Register online at www.tpg.com.au or call 1300 360 855

PREMIUM BUSINESS SHDSL NETWORKS

1Mbps/1Mbps [†] (2 wire)	\$199 Monthly
2Mbps/2Mbps [†] (2 wire)	\$399 Monthly

- Unlimited private traffic
- 100% throughput
- VoIP & Video conferencing ready
- Modem router included

\$199.00
From MONTHLY INC. GST

TPG SHDSL is only available at specified TPG ADSL2+ enabled exchanges. † Speed subject to but not limited to distance from local exchange and quality of phone line. Total minimum cost over 24 month contract period for 1Mbps/1Mbps (2 wire) plan is \$5,575 (includes \$799 setup fee and free modem); for 2Mbps/2Mbps (2 wire) is \$10,375 (includes \$799 setup fee and free modem). Prices subject to change without notice. Full terms and conditions apply.

Visit www.tpg.com.au/shdsl or call 1300 659 412 for more details



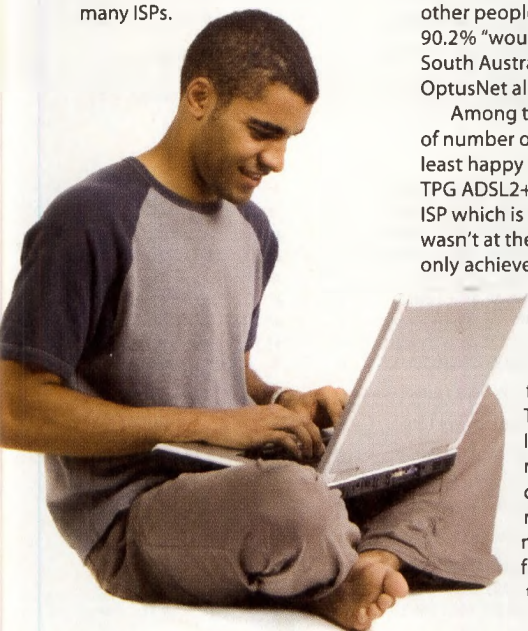


Internode tops broadband satisfaction

Internode has happiest broadband customers: survey.

Broadband ISP Internode has scooped customer satisfaction awards in Whirlpool.net.au's annual survey.

More than 20,000 internet users responded to the survey, which was advertised on the homepages of many ISPs.



90.3% of people said they were "very happy" with Internode ADSL1, compared to 86.5% with Internode ADSL2+. Westnet was next at 78.3%, followed by Optus Cable at 76%.

99.3% of customers said they'd recommend Internode ADSL2+ to other people. iiNet ADSL2+ scored 90.2% "would recommend", while South Australian ISP Adam and OptusNet also scored well.

Among the top 10 ISPs in terms of number of survey responses, the least happy customers were with TPG ADSL2+ and Dodo. Wild IT, an ISP which is now in liquidation (but wasn't at the time of the survey), only achieved 22.3% of "very happy" customers.

Dodo's poor satisfaction results correlate with figures released by the Telecommunications Industry Ombudsman recently, showing the company has been receiving inordinate numbers of complaints from consumers. In the third quarter of 2006,

Dodo received 3,224 internet-related complaints: 50% more than Telstra BigPond, four times as many as Optus Broadband and 11 times more than iiNet. Dodo advertises what appear at first glance to be bargain internet deals, but which usually have complex plans with many additional costs if consumers aren't scrupulously careful about reading the offer conditions.

The most demanding of internet users — gamers — said Internode's connection quality was "always excellent" by a large margin over other ISPs. Internode ADSL2+ had 64.8% of customers in this category, compared to 35.4% across all the ISPs. Billion was the most popular ADSL2+ hardware, with a share of 21% of responses, followed by D-Link (17%), Netcomm (11.3%) and Motorola cable modems (10.9%).

The largest group of respondents in Whirlpool's survey was 31 to 40, dispelling the myth that the Whirlpool community is predominantly teenage.

Dan Warne

in brief

MAJOR ADSL2+ EXPANSIONS

iiNet has announced that it has ordered enough equipment from Ericsson for 45,000 new ADSL2+ lines, while Internode has ordered another 30,000. iiNet also announced it had already achieved coverage of 95.6% of the population in Perth, 92.8% in Sydney, 78.1% in Brisbane and 68.5% in Melbourne.



your monthly broadband guide

APC is proud to partner with the independent broadband price-monitoring service Broadband Choice (broadbandchoice.com.au) to bring you the best ADSL and cable deals.

The comparison table on the following pages focuses on internet service providers that best serve the majority of APC readers' needs — those that have national coverage (though we have included some ISPs that provide higher than 2Mbit/s speed services in limited areas).

Only those meeting at least three of our four plan selection criteria are listed:

Budget plan: cheapest deal under \$35/month.

Light plan: cheapest deal under \$60/month, with at least 512Kbit/s speed and 1GB data.

Family plan: largest download allowance under \$80/month, at least 512Kbit/s and 10GB data.

High-speed: cheapest 1.5Mbit/s plan under \$100/month, with 10GB data minimum.

If an ISP has "unlimited downloads" but speed is throttled after reaching a certain limit, the portion in which you can get full-speed downloads is listed as its limit.

APC has picked the lowest price for a contract period of six months or less for broadband installation. Otherwise, the lowest-priced option was selected.

The installation price doesn't include a modem because you may find you'll get better value by buying one separately.

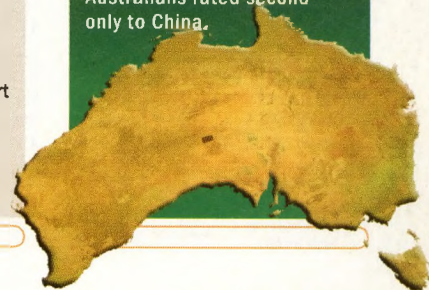
Can't find your provider in our list? That's because some of the largest ISPs, and many smaller ones, didn't meet the selection criteria. There may be ISPs we didn't list that will provide better deals (but which only service your local area or state).

ISPs enter their own information into the Broadband Choice database. ISPs can contact bc@whirlpool.net.au for more details on how to become part of the database.

Data for our table was extracted from the Broadband Choice database on 13 March 2007.

AUSTRALIA 2ND IN BROADBAND

It's clear that in terms of broadband takeup and speed, Australia is a poor cousin to the rest of the world, says industry analyst Forrester Research. But what about our takeup of broadband services? Looking at ten factors including usage of email, online auctions, instant messaging, online photo sharing and blog publishing, Australians rated second only to China.





Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kb/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kb/s, minimum 1GB data limit)	High-speed plan (under \$100, at least 1.5Mb/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Super-fast broadband ISPs (faster than 1.5Mb/s)									
Comcen ADSL2+	www.comcen.com.au	\$29.95* 1GB+ 24Mb/s	\$29.95* 1GB+ 24Mb/s	\$69.95† 40GB 24Mb/s	\$59.95† 20GB 24Mb/s	✗	✓	\$100 12mths	✗
Dodo ADSL2+	www.dodo.com.au	\$29.90† 1GB+ 24Mb/s	\$29.90† 1GB+ 24Mb/s	\$59.90† 20GB+ 24Mb/s	\$49.90† 10GB+ 24Mb/s	✓	✓	\$1.95 \$99 12mths	✗
iNet broadband2+ ADSL (24Mbit)	www.inet.net.au	\$29.95† 500MB+ 24Mb/s	\$39.95 1GB 3Mb/s	\$69.95† 20GB+ 24Mb/s	\$59.95† 10GB+ 24Mb/s	✗	✓	\$79.95 6mths	✗
Internode Extreme ADSL2+	www.internode.on.net	N/A	\$59.95 20GB 24Mb/s	\$79.95 40GB 24Mb/s	\$59.95 20GB 24Mb/s	✗	✓	\$129 6mths	✗
Koala ADSL2+	www.koalatelecom.com.au	\$34.95† 500MB 24Mb/s	\$44.95† 5GB 24Mb/s	\$74.95† 50GB 24Mb/s	\$49.95† 10GB 24Mb/s	✓	✓	\$149.95 6mths	✗
Letsgo Go ADSL2+ 24Mbit	www.letsgo.com.au	N/A	\$39.95† 60GB 24Mb/s	\$39.95† 60GB 24Mb/s	\$39.95† 60GB 24Mb/s	✗	✓	\$50 12mths	✗
Matilda Internet aDSL2+	www.matilda.net.au	N/A	\$59.95† 1GB 24Mb/s	\$79.95† 20GB+ 24Mb/s	\$69.95† 10GB+ 24Mb/s	✓	✓	\$180 1mth	✗
OptusNet Cable	http://broadbandsales. optusnet.com.au	\$29.95† 300MB+ 9.765625Mb/s	\$39.95† 2GB+ 9.765625Mb/s	\$69.95† 20GB+ 9.765625Mb/s	\$69.95† 20GB+ 9.765625Mb/s	✗	✓	\$89 12mths	✗
OptusNet DSL Direct	http://broadbandsales. optusnet.com.au	\$29.95† 300MB+ 24Mb/s	\$39.95† 2GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	\$69.95† 20GB+ 24Mb/s	✗	✓	\$89 12mths	✗
Primus up to 8000Kbps	www.primus.com.au	\$29.95† 1GB 8Mb/s	\$29.95† 1GB 8Mb/s	\$69.95† 20GB 8Mb/s	\$59.95† 10GB 8Mb/s	✗	✓	\$118 1mth	✓
Spin ADSL2+	www.spin.net.au	\$29.95† 1GB+ 24Mb/s	\$29.95† 1GB+ 24Mb/s	\$69.95† 40GB 24Mb/s	\$59.95† 20GB 24Mb/s	✗	✓	\$100 12mths	✗
Telstra BigPond Cable	www.bigpond.com	\$29.95* 200MB^ 7.8125Mb/s	\$59.95† 10GB^ 7.8125Mb/s	\$59.95† 10GB^ 7.8125Mb/s	\$59.95† 10GB^ 7.8125Mb/s	✗	✓	\$189 12mths#	✗
TPG Residential ADSL2+	www.tpg.com.au	\$29.99* 600MB 24Mb/s	\$39.99 3GB 24Mb/s	\$59.99 30GB 24Mb/s	\$49.99 18GB 24Mb/s	✗	✓	\$59.95 12mths	✗
Regular broadband ISPs (1.5Mb/s or less)									
.Netcall ADSL	www.netcall.com.au	\$24* 500MB 256Kb/s	\$30* 1GB 512Kb/s	\$50* 24GB 512Kb/s	\$69* 18GB 1.5Mb/s	✓	✗	\$130 6mths	✓
.Netcall ADSL	www.netcall.com.au	\$29* 2GB 256Kb/s	\$29* 1GB 512Kb/s	\$50* 24GB 512Kb/s	\$70* 18GB 1.5Mb/s	✓	✗	\$110 12mths	✓
aaNet ADSL	www.aanet.net.au	\$27.90* 1GB+ 256Kb/s	\$33.90* 1GB+ 512Kb/s	\$74.90* 36GB+ 512Kb/s	\$54.90* 14GB+ 1.5Mb/s	✓	✓	\$145 6mths	✓
aaNet ADSL	www.aanet.net.au	\$24.90* 1GB+ 256Kb/s	\$29.90* 1GB+ 512Kb/s	\$79.90* 48GB+ 1.5Mb/s	\$49.90* 14GB+ 1.5Mb/s	✓	✓	\$145 12mths	✓
AAPT ADSL	www.aapt.com.au	\$29† 500MB 256Kb/s	\$39† 12GB 512Kb/s	\$49† 15GB 1.5Mb/s	\$49† 15GB 1.5Mb/s	✓	✓	\$0 1mth	✓
Accsoft Freeway ADSL	www.onmyweb.net	N/A	\$52.95 1.5GB 512Kb/s	\$75.95 15GB 512Kb/s	\$98.95 10GB 1.5Mb/s	✓	✓	\$132 6mths	✓
Aspark ADSL	www.aspark.com.au	N/A	\$53.95† 25GB 512Kb/s	\$53.95† 25GB 512Kb/s	\$99.95† 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
AuNix Broadband	www.aunix.com.au	\$24.95* 200MB 256Kb/s	\$39.95† 25GB 512Kb/s	\$74.95† 35GB 1.5Mb/s	\$74.95† 35GB 1.5Mb/s	✓	✓	\$89 6mths	✓
Auritel Broadband	www.auritel.com.au	N/A	\$59.95 25GB 512Kb/s	\$59.95 25GB 512Kb/s	\$89.95 35GB 1.5Mb/s	✓	✗	\$129 6mths	✓
Aussiewide Residential ADSL	www.aussiewide.com	N/A	\$59.95 30GB 512Kb/s	\$59.95 30GB 512Kb/s	\$99 30GB 1.5Mb/s	✓	✓	\$110 6mths	✓
Australia On Line ADSL	www.australianonline.net.au	\$16.95* 200MB 256Kb/s	\$39.95 2GB 512Kb/s	\$54.95 No limit 512Kb/s	\$94.95 No limit 1.5Mb/s	✓	✓	\$99 6mths	✓
Australis Internet ADSL	www.australis.net	\$24.95* 200MB 256Kb/s	\$49.95 5GB 512Kb/s	\$64.95 30GB 512Kb/s	\$79.95 10GB 1.5Mb/s	✓	✓	\$169 1mth	✓
B Digital ADSL	www.mysoul.com.au	\$34.95† 5GB 256Kb/s	\$44.95† 5GB 512Kb/s	\$64.95† 10GB 1.5Mb/s	\$64.95† 10GB 1.5Mb/s	✓	✓	\$119 6mths	✓
BIT.net	www.bit.net.au	\$19.95† 2GB 256Kb/s	\$29.95† 2GB 512Kb/s	\$69.95† 40GB 512Kb/s	\$59.95† 10GB 1.5Mb/s	✓	✓	\$132 6mths	✓
BKB Internet Home ADSL	www.bkb.net.au	N/A	\$49.95 1GB+ 512Kb/s	\$64.95 10GB+ 512Kb/s	\$89.95 10GB+ 1.5Mb/s	✓	✓	\$139 6mths	✓
Bluemaxx ADSL	www.bluemaxx.net.au	\$24.95* 200MB 256Kb/s	\$54.95 5GB 512Kb/s	\$74.95 30GB 512Kb/s	\$84.95 10GB 1.5Mb/s	✓	✓	\$105 12mths	✓
BBi Flat Rate DSL	www.brownbear.net.au	\$32.95 2GB 256Kb/s	\$39.95 2GB 512Kb/s	\$74.95 60GB 512Kb/s	\$64.95 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
BBi Excess DSL	www.brownbear.net.au	\$32.95* 2GB 256Kb/s	\$39.95* 2GB 512Kb/s	\$74.95* 60GB 512Kb/s	\$64.95* 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Brown Bear DSL/ Phone	www.brownbear.net.au	\$19.95† 1GB 256Kb/s	\$29.95† 1GB 512Kb/s	\$69.95† 60GB 512Kb/s	\$59.95† 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Bullet ADSL	www.bullet.net.au	\$34.95* 500MB 256Kb/s	\$49.95* 5GB 512Kb/s	\$69.95* 25GB 512Kb/s	N/A	✓	✓	\$150 12mths	✓
Central Coast Internet ADSL	www.cci.net.au	\$34.95* 500MB 256Kb/s	\$54.95* 1GB 512Kb/s	\$64.95* 10GB 512Kb/s	N/A	✓	✓	\$132 6mths	✓
Charlot ADSL	www.charlot.net.au	\$29.95* 500MB 256Kb/s	\$39.95 2GB 512Kb/s	\$59.95 40GB 512Kb/s	\$69.95 25GB 1.5Mb/s	✓	✓	\$110 6mths	✓
Comcen Internet ADSL	www.comcen.com.au	\$19.95† 300MB 256Kb/s	\$29.95† 2GB+ 512Kb/s	\$59.95† No limit 512Kb/s	\$59.95† 25GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Comstech Systems ADSL	www.comstech.com.au	\$32.95 500MB 256Kb/s	\$44.95 3GB 512Kb/s	\$69.95 50GB 512Kb/s	\$74.95 25GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
Concept Networks ADSL	www.conceptual.net.au	\$29.95* 500MB 256Kb/s	\$39.95* 1GB 512Kb/s	\$69.95 No limit 512Kb/s	\$79.95* 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Connexus Home ADSL	www.connexus.net.au	\$27.95* 200MB+ 256Kb/s	N/A	\$64.95 12GB+ 512Kb/s	\$79.95 12GB+ 1.5Mb/s	✓	✓	\$149 6mths	✓
CyberOne ADSL	www.cyberone.com.au	\$19.95† 200MB 256Kb/s	\$39.95† 1GB 512Kb/s	\$64.95† No limit 512Kb/s	\$74.95† 15GB+ 1.5Mb/s	✓	✓	\$99 6mths	✓
Cyberspace Internet ADSL	www.cyberspace.net.au	\$21.95† 200MB 256Kb/s	\$46.95† 5GB 512Kb/s	\$57.95† No limit 512Kb/s	\$79.95† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
DCSI	www.dcsi.net.au	\$29.95 500MB 256Kb/s	\$49.95 10GB 512Kb/s	\$59.95 20GB 512Kb/s	\$69.95 20GB 1.5Mb/s	✓	✓	\$125 6mths	✓
Diamond Telecom ADSL	www.diamondtelecom. com.au	N/A	\$49.95† 25GB 512Kb/s	\$49.95† 25GB 512Kb/s	\$84.95† 35GB 1.5Mb/s	✓	✗	\$69 6mths	✓
DigiPlus	www.digipius.com.au	\$29.95† 10GB 256Kb/s	\$42.95† 5GB 512Kb/s	\$49.95† 10GB 512Kb/s	\$89.95† 10GB 1.5Mb/s	✓	✗	\$99 1mth	✓
Dodo ADSL	www.dodo.com.au	\$29.90† 1GB+ 256Kb/s	\$39.90† 1GB+ 1.5Mb/s	\$79.90† 20GB+ 8Mb/s	\$59.90† 15GB+ 1.5Mb/s	✓	✓	\$1.90 \$99 6mths	✓
DragNet Budget ADSL	www.dragnet.com.au	\$26.95* 200MB+ 256Kb/s	N/A	\$69.95 10GB+ 512Kb/s	\$95.95 10GB+ 1.5Mb/s	✓	✓	\$100 6mths	✓
DragNet Power ADSL	www.dragnet.com.au	N/A	\$54.95† 1.5GB 512Kb/s	\$74.95 15GB 512Kb/s	\$95.95 10GB 1.5Mb/s	✓	✓	\$100 6mths	✓
Ecomtel ADSL	www.ecomtel.com.au	\$24.90† 300MB 256Kb/s	\$54.90† No limit 512Kb/s	\$54.90† No limit 512Kb/s	\$69.90† No limit 1.5Mb/s	✓	✓	\$120 1mth	✓
Eftel ADSL	http://w3.eftel.com	\$19.95† 500MB 256Kb/s	\$39.95† 2GB 512Kb/s	\$59.95† 25GB+ 512Kb/s	\$69.95† 25GB+ 1.5Mb/s	✓	✓	\$125 12mths	✓
ETelecom ADSL	www.etelecom.com.au	\$19.95† 200MB 256Kb/s	\$39.95† 1GB 512Kb/s	\$69.95† 15GB 1.5Mb/s	\$69.95† 15GB 1.5Mb/s	✓	✓	\$99 12mths	✓
Fonebox ADSL Broadband Internet	www.fonebox.com.au	\$29.90* 200MB 256Kb/s	\$49.90 5GB 512Kb/s	\$79.90 30GB 512Kb/s	\$79.90 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Green Tree Frog ADSL	www.greentreefrog.net.au	N/A	\$55 40GB 512Kb/s	\$77 100GB 512Kb/s	\$99 80GB 1.5Mb/s	✓	✓	\$132 6mths	✓
Green Tree Frog Business ADSL	www.greentreefrog.net.au	N/A	\$55* 40GB 512Kb/s	\$77* 100GB 512Kb/s	\$99* 80GB 1.5Mb/s	✓	✓	\$132 6mths	✓

Name	Online	Budget plan (under \$35)	Light plan (under \$60, at least 512Kbit/s, minimum 1GB data limit)	Family plan (under \$80, at least 512Kbit/s, minimum 10GB data limit)	High-speed plan (under \$100, at least 1.5Mbit/s, minimum 10GB data limit)	National	Spam filtering	Setup fee and contract length	Rapid transfer
Regular broadband ISPs (1.5Mbit/s or less)									
Hande Communications ADSL - Shaped	www.hande.net.au	\$32.95 500MB* 256Kb/s	\$44.95 1.5GB* 512Kb/s	\$79.95 30GB* 512Kb/s	\$84.95 10GB* 1.5Mb/s	✓	✓	\$119.95 1mth	✓
Hande Communications ADSL - Usage Based	www.hande.net.au	\$32.95* 500MB* 256Kb/s	\$44.95* 1.5GB* 512Kb/s	\$69.95* 15GB* 512Kb/s	\$89.95* 15GB* 1.5Mb/s	✓	✓	\$119.95 1mth	✓
HugoNet Home ADSL Broadband	www.hugonet.com.au	\$29.95* 250MB+ 256Kb/s	\$49.95* 1GB+ 512Kb/s	\$69.95 25GB+ 512Kb/s	\$79.95 20GB+ 1.5Mb/s	✓	✓	\$99 12mths	✓
IF Com ADSL	www.ifcom.com.au	\$24.95† 200MB 256Kb/s	\$49.95† 25GB 512Kb/s	\$49.95† 25GB 512Kb/s	\$84.95† 35GB 1.5Mb/s	✓	✓	\$99 12mths	✓
INet broadband1 ADSL	www.inet.net.au	\$29.95† 500MB+ 256Kb/s	\$49.95 2GB 512Kb/s	\$69.95 10GB 512Kb/s	\$99.95 15GB 1.5Mb/s	✓	✓	\$79.95 6mths	✓
Infinity Plus Residential DSL ISP ADSL	www.infinityplus.net.au	N/A	\$54.95† 25GB 512Kb/s	\$54.95† 25GB 512Kb/s	\$84.95† 30GB 1.5Mb/s	✓	✓	\$100 6mths	✓
IntegrityNet ADSL	www.integritynet.com.au	\$29.95* 200MB 256Kb/s	\$59.95* 5GB 512Kb/s	\$69.95* 10GB 512Kb/s	\$99.95* 10GB 1.5Mb/s	✓	✓	\$139 12mths	✓
Internet Information Group ADSL	www.iig.com.au	N/A	\$59* 5GB 512Kb/s	\$79* 15GB 512Kb/s	\$99* 15GB 1.5Mb/s	✓	✓	\$120 12mths	✓
Internode Home ADSL	www.internode.on.net	N/A	\$39.95 8GB 512Kb/s	\$69.95 40GB 512Kb/s	\$49.95 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Internode SOHO ADSL	www.internode.on.net	N/A	\$59.95 10GB 512Kb/s	\$69.95 20GB 512Kb/s	\$69.95 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Interworks ADSL	www.interworks.net.au	\$34.95* 1GB 256Kb/s	\$49.95* 5GB 512Kb/s	\$79.95 No limit 512Kb/s	\$99.95* 25GB 1.5Mb/s	✓	✓	\$119 3mths	✓
ISage Internet ADSL	www.isage.aunz.net	\$24.95† 200MB 256Kb/s	\$44.95 25GB+ 512Kb/s	\$79.95 35GB+ 1.5Mb/s	\$76.95† 15GB+ 8Mb/s	✓	✓	\$89 6mths	✓
Ispace ADSL	www.ispace.net.au	\$29.95* 200MB 256Kb/s	\$49.95 5GB 512Kb/s	\$79.95 60GB 512Kb/s	\$79.95 15GB 1.5Mb/s	✓	✓	\$120 6mths	✓
ITEL ADSL	www.itel.net	\$34.95† 4GB 256Kb/s	\$49.95† 4GB 512Kb/s	\$54.95† No limit 512Kb/s	\$69.95* 10GB 1.5Mb/s	✓	✓	\$129 12mths	✓
ADSL Broadband	www.itginternet.net.au	\$31.79* 200MB 256Kb/s	\$54.89 5GB 512Kb/s	\$65.89 30GB 512Kb/s	\$76.89 15GB 1.5Mb/s	✓	✓	\$95 6mths	✓
Jazinet ADSL	www.jazinet.net	N/A	\$46.50 25GB 512Kb/s	\$46.50 25GB 512Kb/s	\$88 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
Jump Internet ADSL	http://jumpnet.com.au	\$30* 200MB 256Kb/s	\$50* 2GB 512Kb/s	\$80 30GB 512Kb/s	\$80 15GB 1.5Mb/s	✓	✗	\$0 12mths	✓
Koala ADSL	www.koalatelecom.com.au	\$29.95† 500MB 256Kb/s	\$39.95† 3GB 512Kb/s	\$79.95† No limit 512Kb/s	\$49.95† 10GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
Lets Go ADSL	www.letsgo.com.au	N/A	\$59.95 30GB 512Kb/s	\$59.95 30GB 512Kb/s	\$99.95 30GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Lizzy ADSL	www.lizzy.com.au	\$16.95* 200MB 256Kb/s	\$39.95 2GB 512Kb/s	\$54.95 No limit 512Kb/s	\$94.95 No limit 1.5Mb/s	✓	✓	\$99 6mths	✓
Lucidity Communications ADSL	www.lucidity.net.au	N/A	\$59.95† 25GB 512Kb/s	\$79.95† 35GB 1.5Mb/s	\$79.95† 35GB 1.5Mb/s	✓	✓	\$120 1mth	✓
Matilda Internet DSL	www.matilda.net.au	\$29.95* 200MB 256Kb/s	\$49.95* 1GB 512Kb/s	\$59.95 10GB+ 512Kb/s	\$69.95 10GB+ 1.5Mb/s	✓	✓	\$110 1mth	✓
Midcoast Internet DSL	www.midcoast.com.au	\$28.50* 200MB* 256Kb/s	N/A	\$71.50* 10GB* 512Kb/s	\$98* 10GB* 1.5Mb/s	✓	✓	\$99 6mths	✓
Netspace Home ADSL	www.netspace.net.au	\$29.95* 300MB 256Kb/s	\$29.95† 1GB+ 512Kb/s	\$69.95† 20GB+ 1.5Mb/s	\$54.95† 10GB+ 1.5Mb/s	✓	✓	\$99 6mths	✓
Netspace SOHO ADSL	www.netspace.net.au	N/A	\$49.95† 15GB 512Kb/s	\$79.95† 20GB 1.5Mb/s	\$64.95† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
NetSpeed ADSL	www.netspeed.com.au	\$19.95† 200MB 256Kb/s	\$34† 1GB+ 512Kb/s	\$74† 30GB+ 512Kb/s	\$74† 10GB+ 1.5Mb/s	✓	✓	\$2 \$139 12mths	✓
North Queensland Telecom ADSL	www.nqtelecom.com.au	N/A	\$49.95 25GB 512Kb/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✓	\$90 1mth	✓
Optraweb ADSL	www.optraweb.com.au	N/A	\$44.95 5GB 512Kb/s	\$74.95 60GB 512Kb/s	\$81.95 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Optraweb Excess DSL	www.optraweb.com.au	\$32.95* 2GB 256Kb/s	\$39.95* 2GB 512Kb/s	\$74.95* 60GB 512Kb/s	\$81.95* 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Optraweb Bundle DSL	www.optraweb.com.au	\$27.95† 2GB 256Kb/s	\$34.95† 2GB 512Kb/s	\$69.95† 60GB 512Kb/s	\$80.95† 15GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Ozefone Digital	www.ozefone.com	\$34.50* 1GB 256Kb/s	\$44.50* 2GB 512Kb/s	N/A	\$89.50* 10GB 1.5Mb/s	✓	✓	\$129 6mths	✓
OzForces Residential ADSL	www.ozforces.com	\$24.95* 200MB 256Kb/s	N/A	\$68.95 25GB 512Kb/s	\$89.95 35GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Pacific Internet DSL	www.pacific.net.au	\$29.95* 250MB 256Kb/s	\$39.95 1GB 512Kb/s	\$54.95 No limit 512Kb/s	\$49.95† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Primus Flexible Broadband	www.primus.com.au	\$24.95† 500MB 256Kb/s	\$34.95† 1GB 512Kb/s	\$69.95† 20GB 1.5Mb/s	\$59.95† 12GB 1.5Mb/s	✓	✓	\$118 1mth	✓
Quantum ADSL	www.quantumtelecom.com.au	N/A	\$49.95† 25GB 512Kb/s	\$79.95† 35GB 1.5Mb/s	\$79.95† 35GB 1.5Mb/s	✓	✓	\$140 1mth	✓
Rabbit Internet ADSL	http://rabbit.com.au	\$27.95† 200MB 256Kb/s	\$34.90† 1GB 512Kb/s	\$80† 60GB 1.5Mb/s	\$59† 10GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Rapid Net ADSL	www.rapidnet.com.au	\$34.95 500MB 256Kb/s	\$44.95 5GB 512Kb/s	\$49.95 15GB 512Kb/s	\$79.95 12GB 1.5Mb/s	✓	✓	\$109 6mths	✓
REDS.NET Internet Services	www.reeds.net.au	\$29.95* 300MB 256Kb/s	\$49 25GB 512Kb/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Saco Technology ADSL	www.sacotech.com.au	N/A	\$45.95† 2GB 512Kb/s	\$75.95† 60GB 512Kb/s	\$74.95† 15GB 1.5Mb/s	✓	✓	\$129.95 6mths	✓
SimpliciTi ADSL	www.simpliciti.com.au	\$31 500MB 256Kb/s	\$47 5GB 512Kb/s	\$57 30GB 512Kb/s	\$87 10GB 1.5Mb/s	✓	✓	\$99 3mths	✓
SkyWays ADSL	www.skyways.net.au	\$29.95* 200MB 256Kb/s	\$49.95* 10GB 512Kb/s	\$69.95 No limit 512Kb/s	\$99.95 30GB 1.5Mb/s	✓	✓	\$109 12mths	✓
Skyways DSL + Phone	www.skyways.net.au	\$29.95† 5GB 256Kb/s	\$39.95† 10GB 512Kb/s	\$59.95† No limit 512Kb/s	\$89.95† 30GB 1.5Mb/s	✓	✓	\$109 6mths	✓
Snowynet ADSL	www.snowy.net.au	\$29.90* 200MB+ 256Kb/s	N/A	\$69.90 No limit 512Kb/s	\$99.90 No limit 1.5Mb/s	✓	✓	\$110 6mths	✓
Southern Cross Telco ADSL	www.sctelco.com.au	\$29.95† 400MB 256Kb/s	\$39.95† 2GB 512Kb/s	\$79.95† 30GB 1.5Mb/s	\$79.95† 30GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Spin Internet	www.spin.net.au	\$19.95† 300MB 256Kb/s	\$29.95† 2GB+ 512Kb/s	\$59.95† No limit 512Kb/s	\$49.95† 15GB 1.5Mb/s	✓	✓	\$99 6mths	✓
Supermerd SuperDSL	www.supermerd.com.au	\$24.95* 500MB 256Kb/s	\$44.95* 10GB 512Kb/s	\$59.95 No limit 512Kb/s	\$89.95* 30GB 1.5Mb/s	✓	✓	\$110 6mths	✓
TalkTODAY ADSL	www.talktoday.com.au	\$29.95† 500MB* 256Kb/s	\$41.95† 5GB* 512Kb/s	\$64.95† 10GB* 512Kb/s	\$69.95† 30GB* 1.5Mb/s	✓	✓	\$119 6mths	✓
telaustralia SME & Res	www.telaustralia.com.au	N/A	\$49.95 25GB 512Kb/s	\$79.95 35GB 1.5Mb/s	\$79.95 35GB 1.5Mb/s	✓	✗	\$120 6mths	✓
Telstra BigPond ADSL	www.bigpond.com	\$29.95* 200MB* 256Kb/s	N/A	\$69.95† 12GB* 1.5Mb/s	\$69.95† 12GB* 1.5Mb/s	✓	✓	\$2.50 \$99 12mths	✓
Fat Free Broadband ADSL	www.fatfreephones.com	N/A	\$49 25GB 512Kb/s	\$49 25GB 512Kb/s	\$89 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓
TrumpNet ADSL	www.trump.net.au	\$29.95* 200MB 256Kb/s	N/A	\$75.95 No limit 512Kb/s	\$99.95 No limit 1.5Mb/s	✓	✓	\$135 12mths	✓
TSN Broadband	www.tsninternet.com.au	\$29.95 5GB 256Kb/s	\$39.95 10GB 512Kb/s	\$69.95 50GB 1.5Mb/s	\$49.95 20GB 1.5Mb/s	✓	✓	\$129 6mths	✓
Web Ace ADSL	www.webace.com.au	\$19.95† 200MB 256Kb/s	\$39.95† 2GB 512Kb/s	\$69.95 60GB 512Kb/s	\$84.95 15GB 1.5Mb/s	✓	✓	\$119 6mths	✓
Web-Hermits ADSL	www.web-hermits.com	\$34.95 2GB 256Kb/s	\$41.95 2GB 512Kb/s	\$49.95 20GB 512Kb/s	\$81.95 20GB 1.5Mb/s	✓	✗	\$109 6mths	✓
Westnet Home ADSL	www.westnet.com.au	\$29.95† 500MB 256Kb/s	\$34.95† 1GB 512Kb/s	\$54.95† 10GB+ 512Kb/s	\$69.95† 10GB+ 1.5Mb/s	✓	\$0.83	\$99 6mths	✓
Wild DSL 2007 Plans	www.wildit.net.au	\$29.95† 20GB 256Kb/s	\$39.95† 30GB 512Kb/s	\$59.95† 75GB 512Kb/s	\$59.95* 12GB 1.5Mb/s	✓	✓	\$98 1mth	✓
Winshop ADSL	www.winshop.com.au	\$29.95 500MB 256Kb/s	\$39.95 3GB 512Kb/s	\$59.95 15GB 1.5Mb/s	\$59.95 15GB 1.5Mb/s	✓	✓	\$139 12mths	✓
Yassie Net ADSL	www.yassie.com.au	\$29.95† 20GB 256Kb/s	\$39.95* 9GB 512Kb/s	\$59.95† 75GB 512Kb/s	\$59.95* 12GB 1.5Mb/s	✓	✓	\$98 1mth	✓
yourhub ADSL	www.yourhub.com.au	N/A	\$55 1.5GB 512Kb/s	\$80 15GB 512Kb/s	\$95 10GB 1.5Mb/s	✓	✓	\$110 12mths	✓
ZCTS ADSL	www.zcts.net	N/A	\$46.50 25GB 512Kb/s	\$46.50 25GB 512Kb/s	\$88 35GB 1.5Mb/s	✓	✓	\$110 1mth	✓

Key: * ISP charges excess usage fees when you exceed your download limit; † This price only available if bundled with long distance telephony from the ISP. ‡ Additional download allowance available with this plan for use in off-peak periods; †† ISP combines sent and received data when calculating usage. # Minimum BigPond Cable setup fee is based on 12-month contract with modem included. Telstra does not offer a BYO modem option.

HARDWARE HACKING FOR ALL

Whether you're seeking extra features or faster speeds, *Mike Williams* shows you how to make computer hardware work the way you want.

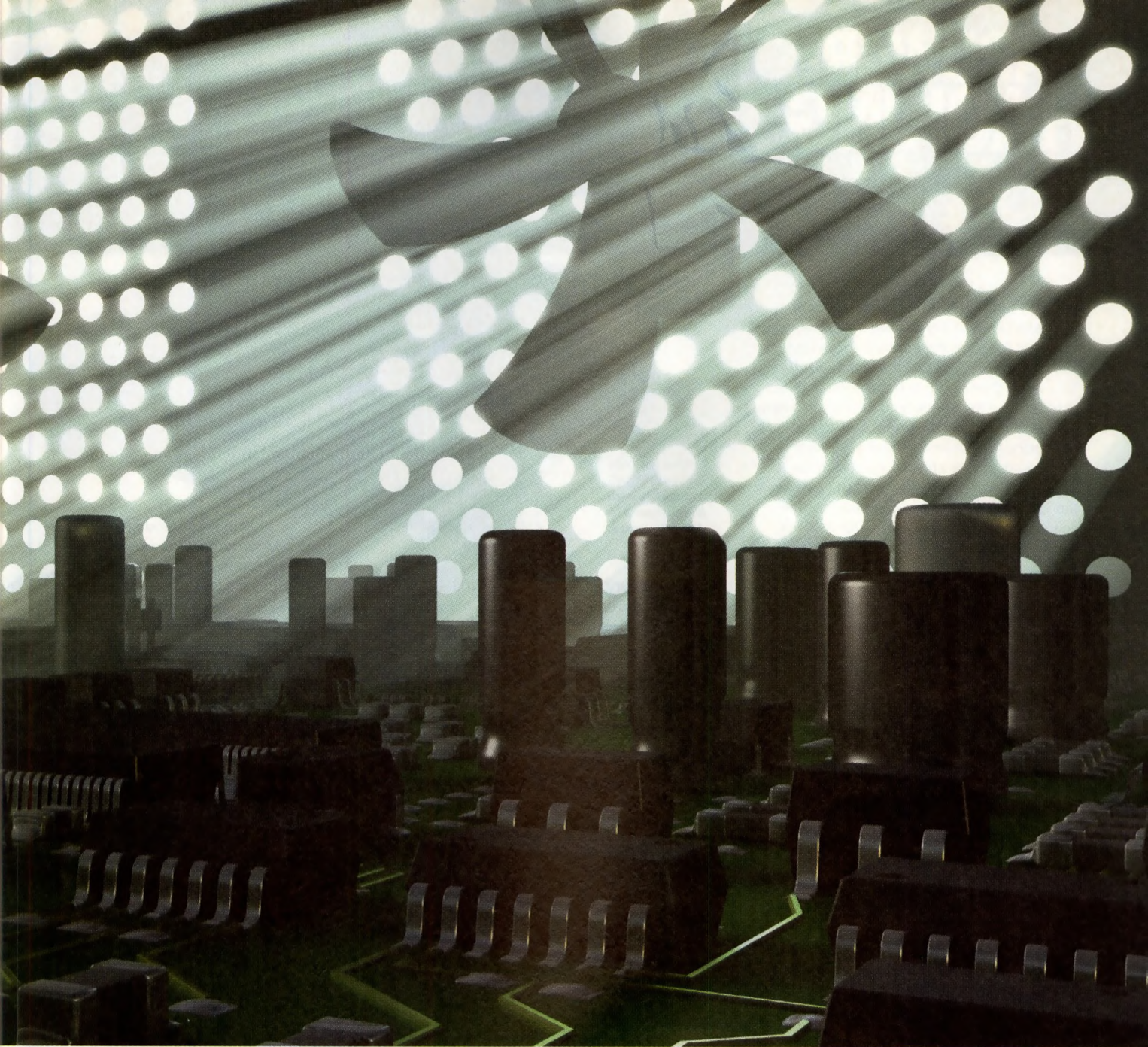
When software won't do the job you need then most people will dump it and go looking for a suitable replacement. Hardware, though, is a different story. You're much more likely to struggle on, shrug your shoulders and say, "That's just the way it is". But it isn't. With the right hardware hack it's surprising just how many hardware limitations you'll be able to overcome. Give your router greater speed, more range and features; use your BlackBerry as a USB drive; get more speed from a Core 2 Duo CPU; and a whole lot more. All this with no significant use of tools, or soldering, so don't be concerned if you're hardware-phobic. The following is only a selection of projects, but once you've tasted hardware hacking, you'll find that no item is immune to a little personal modification or two.

Hardware hacking doesn't have the best of reputations, and it doesn't take much online browsing time to find out why. The web is packed with pointless projects where people spend lots of cash on various components, then take hours to put them all together, all to produce something they could have obtained more cheaply and easily by just, well, buying it.

It can be fun to learn about hardware by tinkering with it, but you shouldn't have to pay for it. We've chosen projects more wisely to save you money, and to give you a better product when you're done.

Wireless routers are a great place to start. They're very cheap these days, but the budget models tend to be limited, leaving you scratching around trying to do what you need.

Does your router let you boost power to 251W, for instance, for greater range? Does it support Quality of Service, reserving bandwidth for games, VoIP or other applications that need it? Can it handle a variety of standards to go beyond the 54g speed limit? Do you get DNS forwarding, Dynamic DNS, port triggering, UPnP, WOL (Wake On LAN) and just about every other feature you'll ever need? All this wireless power — and a whole lot more — can be yours, simply by flashing your current router with open source third-party firmware such as DD-WRT (www.dd-wrt.com). The classic hardware to use is the Linksys WRT54G, but in fact it'll work on many Broadcom-based routers: see the DD-WRT site for a list (www.dd-wrt.com/wiki/index.php/Supported_Devices). Be sure to



read the small print, though, as the Linksys routers in particular have changed a lot over the years, and not every WRT54G model will be compatible.

Don't have a suitable router? Try eBay: when we looked there were 39 Linksys WRT54 variations around, going for a typical price of around \$50. Not bad for what will be one of the most feature-packed routers around by the time you've finished with it.

REVAMP YOUR ROUTER

The upgrade process starts by downloading the appropriate DD-WRT firmware (www.dd-wrt.com/dd-wrtv2/downloads.php). Starting with the mini generic variant — the file will look something like "dd-wrt.v23_mini_generic.

bin" — should ensure it'll work first time. Read the files "hwsupport.txt" and "notes.txt" in the firmware folder for up-to-date installation advice, then grab the version you need, and unzip the .BIN file it contains.

Uploading the firmware to your router is the most sensitive part of this whole operation, so it's important to ensure that the process doesn't get interrupted.

Close down any running applications, including non-essential applications with icons in your system tray — and yes, that means your antivirus program, too. Plug in to your router with a wired connection, rather than wireless, for the most speed and reliability.

When you're ready, open a browser window, then type your router IP address (say, 192.168.1.1)

into the address bar, and press Enter. Type your username and password to log in — the Linksys default is "admin" for both.

Ensure the router is in a known state by resetting it to factory defaults (Administration > Factory Defaults > Yes > Save Settings > Continue, in most Linksys firmware).

Now use the router's own web interface to upload your firmware (on Linksys hardware, click Administration > Firmware Upgrade > Browse, choose the .BIN file you downloaded earlier, then click "Upgrade"). Make sure you don't close the browser, run any other application, or turn off the computer or router while the upgrade is running. Any interruptions could leave your router as an unbootable paperweight, so just walk away and let your PC finish the job.

HARDWARE HACKING FOR ALL

Finally, do a hard reset on your router to ensure it's starting with the correct default values for DD-WRT. Try holding down the reset button at the back of the system for around 30 seconds and you'll probably see the LEDs flash for a while, then return to normal. If that doesn't work, unplug the router, hold the button down for 30 seconds, plug the router back in and keep the button held down for another 30 seconds. Now you should be able to log in using the default DD-WRT username (root) and password (admin), at which point you can start testing some of your new features. The DD-WRT wiki (www.dd-wrt.com/wiki/index.php/Main_Page) is a great place to start.

ENHANCED BLACKBERRY

While some hardware hacks are about adding all kinds of new features to a device, others are more concerned with making the most of what you already have.

Take the BlackBerry handheld, for instance. It typically comes with 64MB of RAM, but unless you never delete any emails you're probably only using a fraction of that. So wouldn't it be handy if you could use the rest as an external USB drive, to keep essential files with you at all times? Obviously USB drives are quite cheap nowadays, but why spend any money on something else you'll have to carry around and perhaps lose?

The solution is easy: you need a copy of free tool eFile (www.dynoplex.com). This installs one program on your desktop, another

Give your old Linksys WRT54G router new life with the custom DD-WRT firmware.



on your BlackBerry, and lets you choose files you would like to copy between the two. You'll need a copy of BlackBerry Desktop Manager installed as well, because the files are only transferred when the Desktop Manager runs a synchronisation session.

Your BlackBerry can help your PC or laptop out in other ways, too; in particular, as an external modem. This works best if your BlackBerry is a model with a built-in modem — 710X, 7130e, 7250, 7290, 8700 and more — although older models can always install third-party modem software such as Shark Modem (www.mobishark.com).

If you're using BlackBerry's own modem, then start by connecting it to your laptop via a USB cable. Make sure BlackBerry Desktop and BlackBerry Handheld Manager are running in the background. Then click Control Panel >

Phone and Modem

Options > Modems. Look for a new Standard Modem representing the BlackBerry. If you find one, click on it and choose Properties > Diagnostics > Query Modem. You should see "OK" responses for most commands (like "ATQV1E0 - OK"), and the modem identified as a BlackBerry ("AT+GMM — BlackBerry IPmodem"). If there's a problem, try reinstalling the modem drivers — look in C:\Program Files\Common Files\Research In Motion\Modem Drivers — or install the latest version of BlackBerry Desktop.

Now click Control Panel > Network Connections > Create a new connection, choose "Connect to the Internet" and click Next.

Select Set up my connection manually > Next > Connection using a dial-up modem > Next, and give your connection a name, like "BlackBerry".

Click Next and enter the phone number required by your provider (T Mobile is *99# but ask your provider for details). Click Next and enter the username and password that your provider needs. Again, your provider should be able to help if you don't know what to put here. Clear all the checkboxes and click Finish.

Now select your BlackBerry icon in Network Connections and click Properties Networking > Internet Protocol (TCP/IP) > Properties > Advanced, and turn off the "Use IP header compression" checkbox. You'll also need to turn off Hardware Flow Control, Modem Error Control and Modem Compression if you see them, too.

And that's it: double-clicking on your BlackBerry icon in Network Connections should get you online, and able to surf from your laptop. Problems? The next time you can get online, check out the BlackBerryFAQ (www.Blackberryfaq.com). Reading what they have to offer and exploring the forums should help you get the modem working.

USE THE Wii REMOTE ON YOUR PC

Playing games on your PC normally means using a keyboard, mouse, perhaps a joystick or gamepad. And that normally works just fine, but why should you just stop there?

With some help from a program called GlovePIE (Glove Programmable Input Emulator), you can use head trackers such as TrackIR (www.naturalpoint.com/tracklr), virtual reality gloves, such as P5 (www.vrealities.com/P5.html), and even Nintendo's Wii Remote, whether or not the games themselves would normally accept them.

There's surprisingly little effort involved in making this work, just

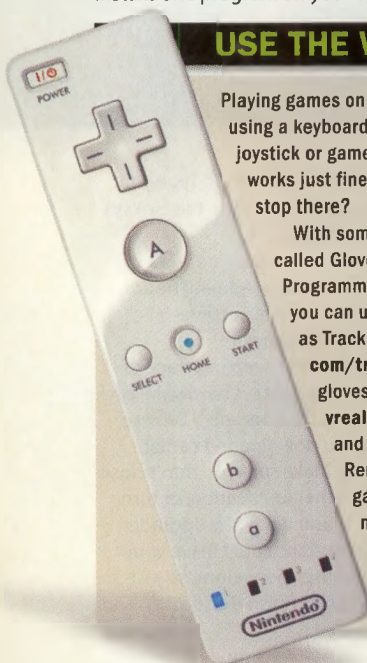
as long as you've got a suitable PC which is Bluetooth-enabled, with DirectX 8 or later, and running Windows 2000 or XP.

Start by downloading a copy of GlovePIE (<http://carl.kenner.googlepages.com/glovepie>), then unzip the file into a folder of your choice and run it — there's nothing to install.

GlovePIE doesn't know anything about Wii remotes itself, but relies on scripts to get everything working. You'll find a suitable script at Vkapadia (www.vkapadia.com/wii/windows.php).

Click File > Open in GlovePIE to load the script. And that's it.

You should now be able to use the Wii remote — or whatever other device is handled by the script — as a mouse, in Windows, games, or any other application you like.





FLASHING YOUR MP3 PLAYER WITH THE OPEN SOURCE ROCKBOX COULD GIVE LONGER BATTERY LIFE, WITH PLAYLISTS LOADING TEN TIMES FASTER

PROCESSOR POWER-UPS

Those BlackBerry ideas were relatively gentle, but our next idea is more risky. How much do you want to speed up your Core 2 Duo CPU?

If you're interested in improving performance, you might already have overclocked your CPU as far as it'll go. But you may have a problem. The faster a processor runs, the more power it requires, so you'll need to increase your CPU voltage (VCORE) along with its clock speed. If your motherboard doesn't let you adjust this, any overclocking efforts will automatically be limited and your CPU may never reach its potential.

The best solution is to look for BIOS upgrades, which often add more flexibility in settings. If you can't get a new BIOS, Core 2 Duos from the E6300 to X6800 can have their core voltage increased with a simple hardware hack. All you need do is connect two pairs of CPU pins together. Processors with a default voltage of 1.325V should see an immediate jump to 1.4V. No soldering is required: just a conducting pen and some insulating tape.

Don't jump in just yet, though. This mod will invalidate your warranty. Get it wrong, or apply it to a processor that doesn't have a 1.325V default voltage, and it could trash your CPU, too. (This isn't likely, but it's a possibility you should consider.) And there's no telling how much extra performance you might get from the tweak, if any at all.

If you're willing to take the risk, you'll need to buy a conductive pen, which will make a silver trace between the pins.

Cut a few strips from the tape first, then use it to cover the pins surrounding the first pair. This will ensure you don't accidentally connect the wrong ones, which could have very nasty results. Then use the conductive pen to "paint" a silver trail between the pins you're connecting. Give it a few minutes to dry — whatever the pen instructions recommend — then repeat the process with the other pair. Reinstall your CPU,

HANDY TIP

If you have an ATI Radeon X800 Pro vivo graphics card, then its 12 pipelines should deliver good 3D performance. Many of these cards actually have 16 pipelines, though, and you can gain access to the other four (with a 33 per cent increase in speed) by upgrading your BIOS. Read the article posted at I-Hacked (www.i-hacked.com/content/view/61/42) to find out more.

ADD A TRIPOD SOCKET TO YOUR CAMERA

Mounting your camera on a tripod is a great way to get sharper pictures, especially with longer than normal exposures. Small, cheap cameras often don't include a tripod socket, though, as the manufacturers are trying to trim costs and assume you won't need one.

But who cares? You can add one yourself with just a few minutes' work.

First, find two flat-sided nuts of the same size and thread as your tripod. You're going to use epoxy resin to glue these to the bottom of your camera, so take a look at that now, and make sure there's a flat area you can use — and that the nuts won't make holding the camera too awkward.

Assuming the camera is suitable, thread both nuts onto a bolt of the same size. Tighten them both together until they're as close as they can get, then dab the epoxy — or any glue that can bond metal to metal — around the seam between the two nuts. Don't use too much, though: you want to bond the nuts together, but they mustn't be glued to the bolt.

Wait for the glue to dry, then remove the nuts from the bolt. Glue the nuts onto the flat area of the camera that you identified earlier, and you're done: an easy tripod socket that you can apply to even the simplest of disposable cameras. You'll never have shaky shots again.

try overclocking it again, and you should be able to get it running even faster this time.

Need more help? Maybe you have a Core 2 Duo with a different default voltage? The VR-Zone has a particularly helpful article, with plenty of pictures to see what you should be doing (<http://sg.vr-zone.com/?i=3904&s=1>). A slightly more complex version of this idea lets you work with an Intel "Dothan" Pentium M 400MHz FSB CPU, to overclock any Intel Pentium M 7x5 CPU by 33 per cent on any Intel 915 chipset-based "Sonoma" laptop. Find out more at Laptop Logic (www.laptoplogic.com/resources/detail.php?id=35).

REGION-FREE DVD

You've bought the DVD drive, you've paid good money to buy DVDs from your country of choice — so why should you have your drive "locked" just because you've changed the region code five times?

It's annoying, absurd and has no legal basis, so don't think you need to live with it. With a little hardware hacking you can get rid of this problem forever. Your first step is to identify exactly which drive and firmware version you're using. If your DVD mastering program doesn't have anything to do this — such as Nero's InfoTool — download, unzip and run the tiny DISCInfo (<http://hijacker.rpc1.com/discinfo>). Make a note of the drive name and model number, the firmware version and date.

Assuming the drive isn't region-free already — DISCInfo will display "No Lock Detected" — then you'll need to do a little more work to make that happen. Get yourself along to <http://forum.rpc1.org/portal.php>, follow the Download firmware link, locate your DVD drive model and check the "region counter" advice.

If you're lucky, the site will point you to a utility that disables the region counter of the drive — Lite-On drive owners can use something called LtnRPC, for instance (<http://dnc014.rpc1.org/LtnRPC>). The next best option is to use patched firmware. If neither are available, there's always a software solution. Firmware solutions such as DVD Genie (www.inmatrix.com) are good at handling software-based region counters, but our pick of the all-round solutions is DVD Region+CSS Free

Why carry around a USB drive when there's room for vital files on your BlackBerry?



HARDWARE HACKING FOR ALL

(www.dvddidle.com/dvd-region-free.htm). It isn't cheap at US\$39.95, but it does do a much better job than anything else.

UPGRADE YOUR MP3 PLAYER

Fixing one device "feature", such as region coding, is useful enough. But the best hardware hacks do a whole lot more. If you have a compatible MP3 player, then flashing it with the open source Rockbox (www.rockbox.org) firmware could let you see some amazing improvements. These will vary depending on your player, but the possibilities include a 50 per cent fall in boot time, playlists loading 10 times faster, longer battery life, new player features such as support for more formats (OGG, FLAC, AC3 decoding on an iPod) and non-audio extras such as games.

Rockbox works with a variety of players, most famously Apple's fourth-generation iPod, fifth and upgraded fifth generation (video — 30 and 60GB only), first-generation nano, and first- and second-generation minis. But it also runs on some Archos (Jukebox 5000, 6000, Studio, Recorder, FM Recorder, Recorder V2 and Ondio) and iRiver players (H100, H300 and H10 series), along with others from iAudio and Toshiba.

The exact steps for installation vary depending on your player, but they're generally straightforward. With a colour iPod, you'd start by making sure it uses the FAT32 file system — that is, it's been initialised by iTunes on a PC, rather than a Mac.

If you're in doubt, plug it in to a Windows PC with iTunes, and it will offer to reformat it

HANDY TIP

If you have an old iPod that seems a lot slower than when it first arrived, try defragmenting the hard drive — some people report that it makes a real difference. Connect it to your PC, right-click the iPod in My Computer, select Properties, then click Tools > Defragment Now > Defragment to get started. This may take a while, so be patient, or perhaps run it overnight or when you're not in need of it.

for you. It's safe to say "yes" — assuming you've got a copy of all the files it contains — because you'll still be able to use it with Macs later.

You'll need to upload some files to the iPod and back up its firmware, too. This will require some disk space, so make sure that it's not crammed full: we'd recommend freeing up at least 150MB to be safe. Then get along to the Rockbox download page (www.rockbox.org/download) and grab the correct firmware for your device. Pick up the manual and the Fonts package, too.

Now use a USB connection to plug the iPod into your PC, then extract the firmware file you've just loaded to the root folder.

Do this correctly and the main folder should now contain a .rockbox folder and a file called "rockbox.ipod". Extract the Fonts package, too, and you should now have a \rockbox\ Fonts folder. The iPod won't use these new firmware files by itself though, so we need to add a Rockbox boot loader to make this happen.

Download the appropriate iPodPatcher tool (<http://download.rockbox.org/bootloader/ipod/ipodpatcher>) for your PC, and the bootloader itself (<http://download.rockbox.org/bootloader/ipod/bootloader-ipodcolor.ipod>) to a new folder called C:\Rockbox on your PC.

Open a command prompt window and enter this code to change to the new folder:

```
//cd c:\rockbox//
```

Ensure your iPod is connected to the PC, and type:

```
//ipodpatcher --scan//
```

The ipodpatcher will find your iPod and report its device number, such as "disk device 2". Make a note of that number, as you'll need it next. Then enter the following — replacing "N" with the disk number you've just discovered — to back up your current firmware partition:

```
//ipodpatcher N -r bootpartition.bin//
```

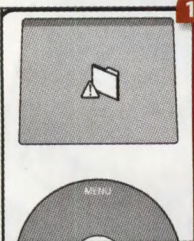
Now type the following — replacing "N" with the device number again — to upload the new boot loader:

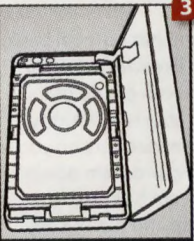
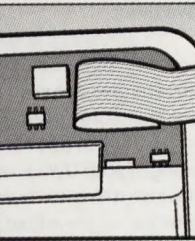
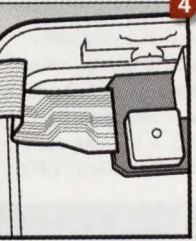
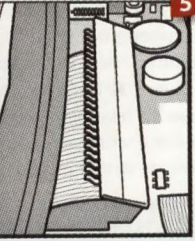
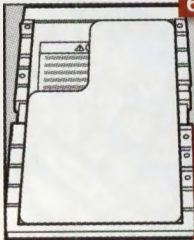
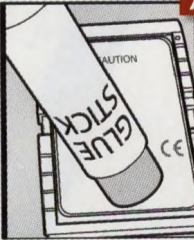
```
//ipodpatcher N -a bootloaderipodcolor.ipod//
```

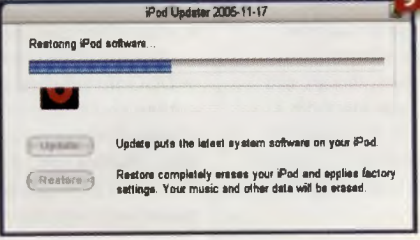
When the upload has finished, disconnect your iPod from the PC and it should reboot, letting you try out Rockbox. See the manual for more

DO THIS...

REPLACING YOUR IPODS HARD DRIVE





9 If your iPod's hard drive fails, don't throw it away or pay to have it fixed — replacing it is a straightforward job you should be able to do yourself.



WANT TO SPEED UP YOUR CPU? THE FASTER A PROCESSOR RUNS, THE MORE POWER IT REQUIRES, SO YOU'LL NEED TO INCREASE YOUR CPU VOLTAGE

on how to use it. If you have problems, you can always go back to the old system — just connect the iPod to your PC, delete the rockbox.ipod file, and enter the disk number below in a PC command prompt window:

```
//ipodpatcher N -d//
```

This will restore the firmware from the backup you created earlier, and you'll have a standard iPod again. Well, that's the theory, anyway. In practice, it's at least conceivable that the initial backup didn't work properly, or there might be problems restoring it. So don't get too confident; like most hardware hacks, there's always the possibility things can go horribly wrong. You should only go ahead if you're happy to take that risk.

REPLACE THE IPOD DRIVE

Rockbox is only one of many hardware hacks available for the iPod, most of which could save you plenty of time and money. Has your hard drive failed? Don't throw it away or pay expensive service charges to have it fixed, it's an easy job that you can probably do yourself.

You might have a 20GB fourth-generation iPod where the hard drive is just making clicking noises and it doesn't seem to work. One common online recommendation for this is to slam the iPod against a flat surface, and many people say this works, at least at first. But they also often say the problem comes back later, and we're not surprised. Jarring a hard drive isn't going to fix anything, and may cause further damage, so a better solution is simply to replace it.

1 The fourth-generation iPod seems to use a 1.8in Toshiba drive, the MK2004GAL. This has now been replaced by the MK2006GAL, and there's a 30GB version called the MK3006GAL if you want a little extra capacity. Replacement drives can be found online, and we spotted a 20GB MK2006GAL at eBay going for \$25, while, as we write *Span* (www.span.com) are selling new 30GB drives for around \$200. These drives should work in fifth-generation iPods, too, although you might want to open up yours first, just to check what it contains.

2 Opening the iPod is perhaps the trickiest part of the operation. You need to use a very thin screwdriver, move it into the seam between the metal and plastic, then work down the case until it pops off.

Metal screwdrivers are likely to scar the casing, though, just a little. If that bothers you then we'd recommend using a non-abrasive nylon screwdriver instead. Buy a replacement

battery kit that includes one — currently \$25 on eBay — and you'll get the screwdriver, more instructions and a spare battery, too.

3 Lift the case up gently, so you don't pull off the ribbon cable connecting the iPod to its various jacks.

4 Look for the IDE connector plugging the hard drive into the iPod board, grasp it tightly at both ends, then lift it off. Remove the anti-shock bumpers from around the edge of the drive, too, then lift it out.

5 The back of the drive is normally covered in foam. This is glued on and tricky to remove, but don't just tear it into pieces: it needs to stay whole so you can add it to the new drive. Use a razor edge scraper to remove it in as few pieces as possible — Amazon has a good quality scraper for only \$10; search for "Stanley Razor Edge Scraper".

6 You'll now see the model name of this drive, and — if you've not bought a replacement yet — you can go online, check its precise dimensions and look for compatible models. Don't buy higher-capacity models without doing this, because most have an extra platter, making the drive too thick to fit in your iPod.

7 Once you have a replacement drive, stick the foam back in place. It might get a little warm, so ideally choose an epoxy resin or something specifically heat-resistant, such as Araldite Extra Strength Super Glue, which can handle up to 65°C.

8 Let the glue dry, then put the drive back in place, restore the anti-shock bumpers and restore the IDE connector. Put the back on, then press it down firmly and evenly until it snaps into place.

9 Then hook it up to your PC, use iTunes to reinstall your software (www.apple.com/ipod/download if you don't have it already) and your iPod should be back in full working order. If you have problems, check online for more advice. Josh Highland's article (www.notpopular.com/blog/comments.php?blogID=63) has lots of pictures and helpful comments.

We've covered plenty of different projects here, but there are many other possibilities if you take the time to look for them. Digital camera hacks? Try CameraHacker (www.camerahacker.com). Mobile phones? Cellphone Hacks (www.cellphonehacks.com). Xbox? Take a look at Xbox Scene (<http://xbox-scene.com>) or Xbox Hackz (www.xboxhackz.com). Just about any gadget can be tweaked, stretched or modified to become something better than it was, so don't live with their limitations anymore: hack your hardware and start reaping the benefits straight away. **ETC**

GOING FURTHER

We've crammed in as many hacks as we could, but space limitations meant some very interesting projects still had to be left out. Here are a few more hardware hacks that you might like to explore. . .

Tired of Windows Mobile on your PDA? Think about giving Linux a try? Distributions such as Familiar are just as easy to use and have a lot of interesting apps available (www.handhelds.org).

Real Linux fans can also try installing Linux on other devices, even the Nintendo DS (see <http://dslinux.org>). The clever 1.7x DS speed hack might help (<http://ndshotmod.com/nds2na.htm>). Memory issues limit this, though, so for console hacks we prefer things like the i-hacked guide to adding a wireless card inside your Xbox (www.i-hacked.com/content/view/223/62, requires some soldering).

Cheap laptops sometimes economise on keyboards, which is a problem if keys start to die. But guess what? The IraqiGeek blog has a detailed explanation of how you may be able to fix things, without paying a massive repair bill (www.iraqigeek.com/?p=45).

Other useful ideas include visiting Unicore (www.unicore.com), who may be able to provide a BIOS upgrade for your PC, even if your manufacturer doesn't list one. We loved the Commodore 64 emulator for mobile PDAs (www.clickgamer.com/c64). And keep an eye on sites like Hack A Day (www.hackaday.com), Life Hacker (www.lifehacker.com), Engadget (www.engadget.com) or The Daily Gadget (<http://dailygadget.typepad.com>) for a regular supply of new ideas.



Bring new life to your old Nintendo DS with a 1.7x speed boost, or even a custom Linux distro.



MS Windows Virtual PC '07

Ever wished you could test an app or a new Linux distro without having to do it on a live system? Virtualisation is your friend, says *James Bannan*.

WHAT'S COVERED

- We take you through how to use Virtual PC in order to create and control your own virtual machine(s): self-contained environments which emulate a standalone system, utilising resources from the host.

The first thing you need is Virtual PC 2007. This is available as a free download from the Microsoft Download Center and is around 30MB in size. The install process is very straightforward — just accept all the defaults and you're done.

Unlike VMware, Virtual PC 2007 is not officially supported for setting up anything other than Windows OSs — it's compatible with Windows XP/2003/Vista and is available for 32-bit and 64-bit platforms. However, although Virtual PC 2007 doesn't officially support Linux distros as the guest operating system, nevertheless it does work. There are various methods of achieving this depending on the distro, and we've published detailed tutorials at www.apcmag.com/virtualpc.

The heart of Virtual PC is the Virtual Machines. These are essentially self-contained environments which emulate a standalone system, utilising resources from the host. This raises an important point — running virtual machines can be very intensive and resource-demanding, depending on what you're running.

Take into account the system requirements of whatever OS/applications you're currently running, but then add in at least 512MB of physical RAM. You'll also need a decent CPU — don't try running virtual machines on a Celeron-based system, for example.

Also, if you're planning to create a few virtual machines on the go, plan ahead and free up some hard drive space to store the virtual disks — 20GB at the very least. A secondary, non-system drive is best.

CREATE A VIRTUAL MACHINE

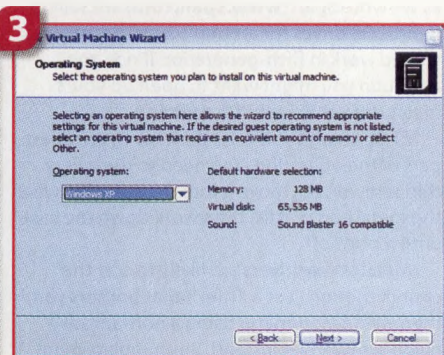
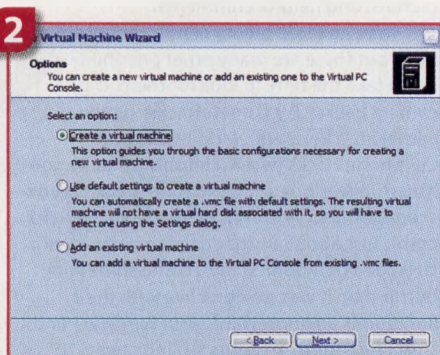
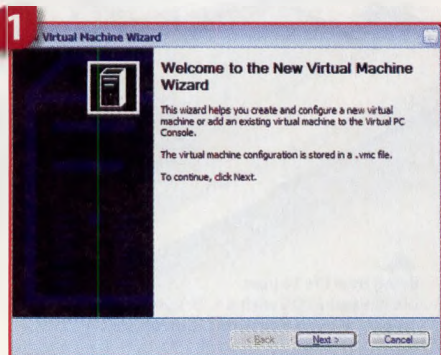
1 Launch Virtual PC 2007 for the first time and you'll be prompted to **2** create a new virtual machine. The available options are to create a new machine, use the default settings to create a

machine or add a pre-existing machine (created on another system, for example). Leave the default option selected and hit Next. Now you're prompted for the name and location of the new machine's VMC file. By default it will be created in My Documents\My Virtual Machines folder, which generally sits on the system drive. You can save the VMC file and create the virtual disk elsewhere, but it makes sense to have them located together. Hit Browse and navigate to where you want to save the file — I find it easier to create a folder specific to each virtual machine.

3 The next screen prompts for the guest operating system. Choose the option most appropriate for whatever OS you plan on installing — if you're going to install Linux select "Other", then hit Next.

4 Depending on the OS chosen, Virtual PC will suggest a recommended amount of RAM. This is usually the minimum amount and it's generally worthwhile increasing it, depending on the amount of physical RAM available on the host machine. Bear in mind that the more machines you're planning to run simultaneously, the less RAM will be available to each machine and to the host. **5** On the Virtual Disk screen, select "A new virtual hard disk" and press Next. By default, Virtual PC will create the disk (VHD file) in the same folder as the VMC machine file, which is handy. Change the disk size to whatever you think you'll need — smaller for a basic testing system or larger for more complex setups.

The size you're entering isn't the size of the resulting VHD file. It's the size which Virtual PC will report to the guest operating system, and the maximum size which the VHD file can ever reach. When you first create the file it will only be a few KB in size. Click Next, then Finish and you're done.



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ProCurve's strength is our flexibility. Our Adaptive EDGE Architecture™ distributes intelligence from the core to the edge, enabling secure, mobile, and converged networks that adapt rapidly and cost-effectively to your changing business needs. Add to the equation our leading position in defining industry standards, our lifetime product warranty,* and our 25 years of innovation, and you have a sound case for making ProCurve the foundation of your network.

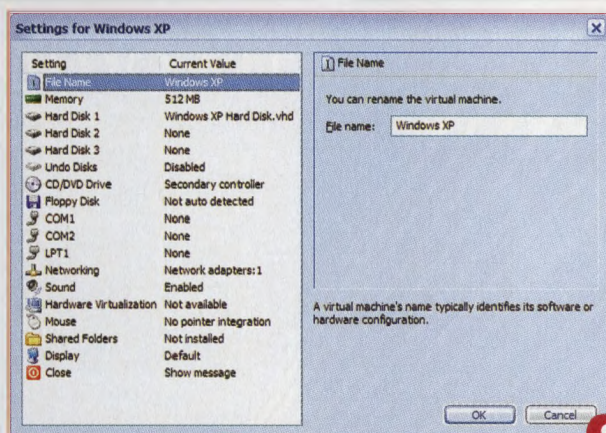
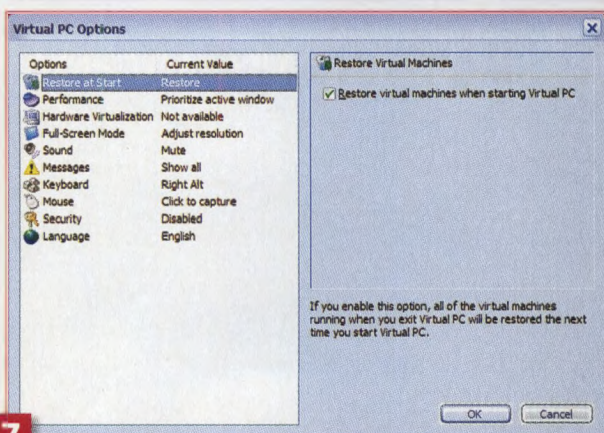
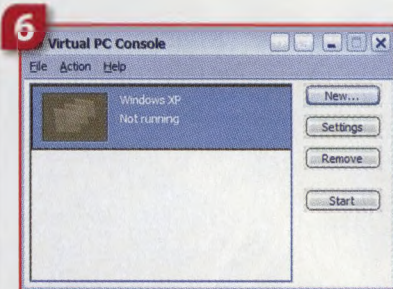
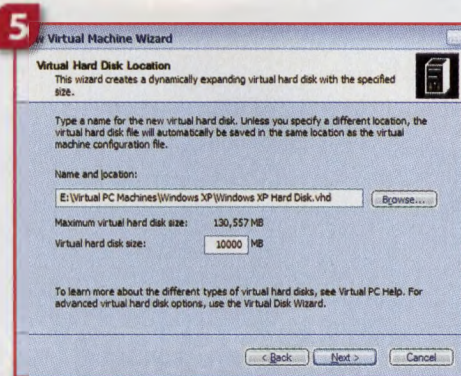
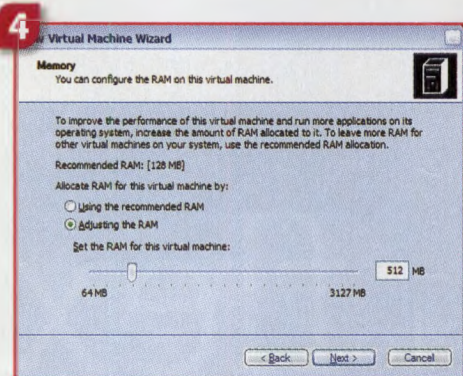
ProCurve Networking by HP has been positioned by Gartner, Inc. in the "Challengers" quadrant of the October 2006 Magic Quadrant for (Global) Campus LAN report.

To receive a FREE copy of the LAN Gartner Magic Quadrant go to www.procurve.com.au/procurvead or call 1300 ProCurve (1300 776 287).



*Lifetime warranty applies to all ProCurve products, excluding the 8800m and 8400m series routing switches, 8100m series interconnect fabric switches, and Secure Access 700w Series, which have a one-year warranty with extensions available.
©2007 Hewlett-Packard Development Company, L.P. Photo: Alan Karchner, HEP1024/FLEX/APC





Back in the Virtual PC Console, you'll see the newly-created machine. The greyed-out window will display the machine in a thumbnail view when it's running — there's about a one-second lag between the actual machine and the console. Highlight the machine name and click Settings. Here you can modify the machine's hardware configuration. Most hardware devices map to whatever devices are available on the host — networking adaptors, optical drives, COM and LPT ports.

If you're going to do a lot of work with Virtual PC, there are ways to speed up various processes. It's a very good idea to install an application like Daemon Tools or PowerISO on the host, or any other program which can emulate an optical drive. Then you can convert any operating system or application CD/DVD to an ISO format and mount the image directly,

rather than having to use the optical drive all the time, which is definitely slower.

If you're not comfortable installing a drive emulator, that's fine. Virtual PC can mount an ISO image directly as a virtual optical drive. It can do the same thing with floppy disk images — IMG, IMA, VFD or DSK — and it's certainly more convenient than using the physical disk.

INSTALL THE OPERATING SYSTEM

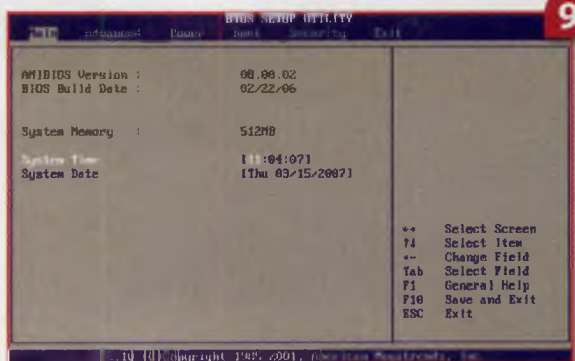
Highlight the machine and click Start. The virtual BIOS loads, and you can hit Del to enter BIOS setup. It's very similar to a normal system BIOS, only with far fewer options. The machine takes its system time from the host. Check out the boot priority under Boot > Boot Device Priority. The machine is configured to boot from floppy, then CD, then HDD, then PXE LAN. This covers just about all eventualities. Hit F10 to save and exit and the machine restarts. Hit right Alt+P to pause the machine. This is a very useful feature in Virtual PC — as the machines boot rather quickly which makes it difficult to make changes.

Go to the Action menu — these are available commands when the machine is running. Note that right Alt is the action key of choice, although you can change this. Go to the CD menu — this is a list of all the available optical drives on the host

system. If you have a CD inserted or image mounted, that particular drive will be available in the Edit menu. Alternatively, select "Capture ISO Image" and navigate to the ISO you wish to use. The same option is available in the Floppy menu — "Capture Floppy Disk Image". Make your selection then resume the machine.

Installing any operating system in the virtual machine is exactly the same as installing it on a normal system. The only thing to bear in mind is that if you need to interact with the installation — product keys, setup options, etc — simply selecting the virtual machine window might not let you interact with the machine within. That level of host/guest shell integration is only really available once the Virtual Additions are installed. Therefore, you'll need to click into the machine itself to work with it, but then the host mouse and keyboard are trapped within the machine. Press right Alt to release it and get back to the host.

Once the operating system is up and running, the first thing you should do is install the Additions — go to the Action menu and select "Install or Update Virtual Machine Additions", or just select right Alt+I. This mounts the Additions installer as an optical drive and kicks off the installer. Accept all the defaults and reboot the machine. Now you can do lots of nice things like seamless crossover between the guest and host, and shared folders. Shared folders are very useful as they give the guest direct access to the host's file system without setting up any sort of networking. **ATTC**



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Internet Technology Awards 2007

APC's readers nominated and then voted for the winners of the APC Internet Technology Awards 2007.

Overall category winner:



Sub-category winner:



Telstra's BigPond Wireless Broadband on the Next G network won Internet Technology of the Year at APC's Internet Technology Awards.

BigPond's Next G wireless broadband network was popular because wireless broadband delivered over Telstra's next-generation 3G network has the broadest coverage of any mobile network in Australia with full broadband speed across the network.

It's one of the earliest wide-scale commercial rollouts of HSDPA mobile technology in the world. APC readers recognised this as a major achievement.

Other key winners included Adelaide-based ISP Internode, which seems to have an unusually strong appeal for techies, winning both the consumer and business sub-categories of Best Broadband Operator.

We're not surprised by Cisco's dominance in the Networking categories, nor by Microsoft's wins with its Visual Studio 2005 Team System, SharePoint Server and SQL 2005 Server products, but some winners were a surprise. Quite frankly, we hadn't even heard of some of them.

One was Melbourne-based The ADWEB Agency, whose product, Intranet Dashboard, won the Best Web Application category — and is enjoying phenomenal success in the US market. The company has managed to operate under the official secrets act — until outed by APC readers.

It was a similar story for some other sub-category winners, such as Atlassian Confluence, whose Confluence enterprise wiki has major corporate customers across the globe, including NASA's Kennedy Space Center; Campaign Monitor, which has cornered the market for web-based email marketing for designers; and finalists such as Omnidrive, which has launched an advanced web-based storage product that's causing a lot of excitement among VCs in Silicon Valley.

If anything, the Awards have pointed to the emergence of a group of young, innovative Australian companies that are taking advantage of Web 2.0 technologies to create products that are winning favour with a global audience, and are marketing their products in a very different way to traditional corporations, using the viral nature of the net. They point to an exciting future for Australian internet developers.

The APC Internet Technology Awards are entirely reader-nominated and voted. APC readers nominated products and technologies on apcmag.com from December '06 to end of February '07. The voting stage was then split: 50% came from reader votes via an online poll, and 50% from readers who are experts in their industry categories, who were polled directly by APC.



BEST INTERNET DEVELOPMENT TOOL

INTEGRATED DEVELOPMENT ENVIRONMENT



Visual Studio 2005 Team System

Eclipse 3.2 IDE
Sun NetBeans 5.5
Zend Studio 5.x

WEB DESIGN



Adobe Dreamweaver 8

Nvu (open source)
Adobe Go Live
NetObjects Fusion

PROGRAMMABLE WEB



Google Maps API

OpenKapow RoboMaker
QEDWiki (IBM)
Yahoo Pipes

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and fostering innovation on the web



Microsoft

Visual Studio®

Develop richer, more powerful
web applications with ease

Microsoft®

Forefront™

Take control of your internet security





The Award's MC, Jo Townsend, from the Nine Network.



apc
Internet Technology
Awards 2007



The Senator, the Hon Helen Coonan delivers a speech on industry support for internet safety.

BEST INTERNET DEVELOPMENT PLATFORM

SERVER

- Apache 2.2.4**
- Adobe Flash Media Server 2
- Microsoft IIS 7.0
- Sun Java System Web Server 7.0
- Zeus Web Server

DATABASE

- Microsoft SQL Server 2005**
- Navicat GUI for MySQL
- Oracle Database XE
- PostgreSQL 8x
- MySQL 5.0

FRAMEWORK

- Ruby on Rails 1.2**
- Adobe Flex 2
- IBM Websphere
- Microsoft ASP.Net Ajax 1.0
- Oracle Application Server

BEST COLLABORATION & PUBLISHING PLATFORM

COMMUNITY

- Wordpress**
- Drupal
- MODx
- MediaWiki
- Umbraco

INTRANET

- Intranet Dashboard**
- Google Apps Premier Edition
- Microsoft Office Sharepoint Server 2007
- Zimbra Collaboration Suite 4.5
- Twiki

ENTERPRISE

- Microsoft Office Sharepoint Server 2007**
- Atlassian Confluence
- IBM Websphere Portal
- JotSpot (Google)
- Lotus Notes Domino

BEST WEB SERVER HARDWARE

ENTRY-LEVEL

- HP ProLiant DL360**
- Dell PowerEdge 860
- Dell PowerEdge SC440
- Sun Fire X2100

MID-RANGE

- Dell PowerEdge 1950**
- IBM BladeCenter HS21
- Sun Fire X4200
- HP ProLiant DL380

HIGH-PERFORMANCE

- Sun Fire T1000**
- HP BladeSystem c-Class
- IBM System p
- Dell PowerEdge 2950

BEST WEB HOSTING

CONSUMER

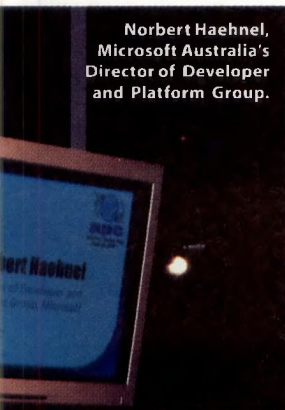
- Hostess (NetRegistry)**
- Net Logistics
- Servers Australia
- Jumba
- Server101

BUSINESS

- Jumba**
- AussieHQ
- Net Logistics
- NetRegistry
- Ilisys

ENTERPRISE

- NetRegistry**
- Hostworks
- Macquarie Telecom
- WebCentral
- Telstra Hosting



Norbert Haehnel,
Microsoft Australia's
Director of Developer
and Platform Group.

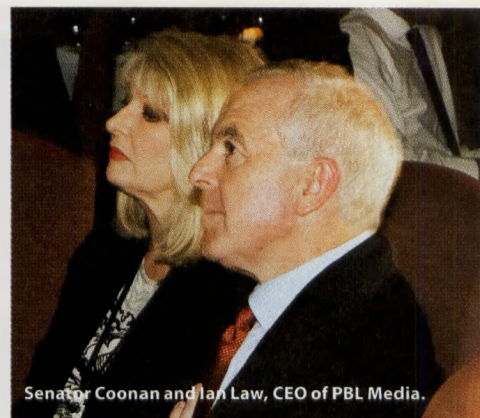


The Awards were held at the Astral rooftop restaurant in Sydney's Star City casino.



THE MICROSOFT SPECIAL AWARD FOR INNOVATION

WINNER
Si-Mi



Senator Coonan and Ian Law, CEO of PBL Media.

Campbell Dobbin, Director of Intranet Dashboard (left); Alan Noble, Google Australia's Engineering Director (centre) and Graeme Reardon, Linksys Regional Manager.



Microsoft Australia's Head of Server & Tools, Martin Gregory.

BEST INTERNET SECURITY

CONSUMER

- McAfee Total Protection**
- D-Link Securespot appliance
- Kaspersky Internet Security Suite
- Norton Personal Firewall 2006
- Zone Alarm Pro Firewall

BUSINESS

- Symantec Client Security**
- McAfee Total Protection for Small Business
- NetGear ProSafe firewall family
- Fortinet Fortigate 60
- Microsoft ISA Server 2006

ENTERPRISE

- Microsoft ISA 2006 Server**
- Check Point VPN-1 family
- Juniper Networks SSG & ISG series
- WebSense Web Security Suite
- SonicWall Pro firewall family

BEST NETWORKING TECHNOLOGY

CONSUMER

- Dynalink RTA1025W**
- Belkin N1
- Billion 7404VPG-M
- D-Link DSL-G604T
- Linksys WRT300N
- NetGear RangeMax NEXT

BUSINESS

- Cisco Integrated Services Router**
- NetGear ProSafe switches
- Linksys RVL200 SSL/VPN router
- NetLeverage ThinPoint
- D-Link DGS-1224 24 Port Switch
- Linksys WRVS4400N

ENTERPRISE

- Cisco catalyst series 6500 switch**
- HP Pro Curve range of switches
- Packeteer PacketShaper
- Juniper MX960 router

BEST BROADBAND OPERATOR

ADSL

- Internode Broadband ADSL**
- Optus DSL
- TPG ADSL Broadband
- Telstra BigPond Broadband ADSL
- AAPT Internet

ADSL2+

- Internode Broadband ADSL**
- iNet Broadband2+
- TPG ADSL Broadband
- Optus DSL Direct
- Telstra BigPond Broadband ADSL2

CABLE

- Optus Cable**
- Neighbourhood Cable
- BigPond Cable Extreme
- TransWEB

BEST WIRELESS BROADBAND

PORTABLE

- Unwired**
- BigAir
- iBurst

MOBILE NETWORK

- Telstra BigPond Wireless Broadband on Next G network**
- 3 Mobile Broadband
- Optus Wireless Connect
- Vodafone Mobile Broadband

WI-FI HOTSPOT

- Internode & Adelaide City Council CityLAN WIFI**
- Azure Wireless
- Optus Wireless Connect Zone
- Telstra Wireless Hotspot

Phil Scott, Group Publisher, Men's and Specialist titles, PBL media and Holly Kramer, Group Managing Director of Telstra Product Management.



The nominees mingle before the Award presentation.



Justin Milne, MD of BigPond wins the main award presented by APC editor, Tony Sarno.



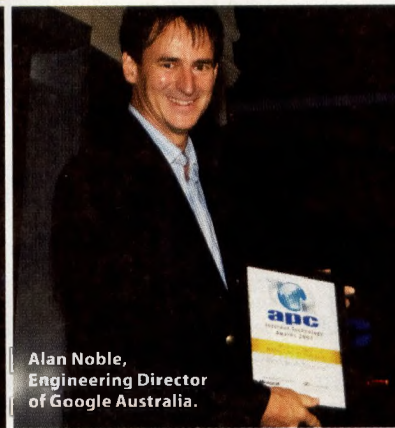
Internet Technology Awards 2007



Finula Crowe, Developer
Product Marketing Manager,
Developer and Design Tools,
Microsoft Australia.



Paul McKeon,
Corporate Communications
Manager, Dell Australia.



Alan Noble,
Engineering Director
of Google Australia.

BEST VoIP TECHNOLOGY CONSUMER

🏆 D-Link DPH-C160S — DECT VoIP cordless phone

Linksys CIT200 Skype Base Station
NetGear Skype Wifi Phone SPH101
Skylook 2.0
Engine Voice Box series 3

SMALL BUSINESS

🏆 Linksys LVS 9000 IP PBX

Asterisk IP PBX
Zultys MX30 IP PBX
D-Link DVA-G3340S wireless router
with VoIP
NetComm SmartVoice Series

ENTERPRISE

🏆 Cisco 7970 Colour Screen Phones

AAPT iProvide Office
Avaya IP Office
Nortel Communication Server 1000 PBX

BEST WEB-BASED APPLICATION

🏆 Google Maps

Remember the Milk
Windows Live Maps
Zapr file sharing
OmniDrive
Google Apps Standard Edition

BUSINESS

🏆 Intranet Dashboard

Campaign Monitor
Google Apps Premier Edition
Basecamp
Gliffy
Zimbra Collaboration Suite 4.5

ENTERPRISE

🏆 Atlassian Confluence

NetSuite 11
Salesforce.com ["Summer 06" release]
Jotspot (Google)
Omniiture Site Catalyst
once:fabrik

BEST MOBILE INTERNET DEVICE

SMARTPHONE

🏆 Nokia e61
Blackberry 8707
HP iPaq HW6965
Telstra HipTop

NOTEBOOK

🏆 Lenovo Thinkpad X60 & T60 series
Apple Macbook Pro
Dell Latitude D620 & D820
Toshiba Portege with Radar WLAN
detection

TECHNOLOGY

🏆 Intel Centrino Duo notebook
technology

BEST INTERNET MARKETING TECHNOLOGY

AD SERVING

🏆 Google AdSense
Accipiter AdManager
DoubleClick DART
OpenAds — open source

ANALYTICS

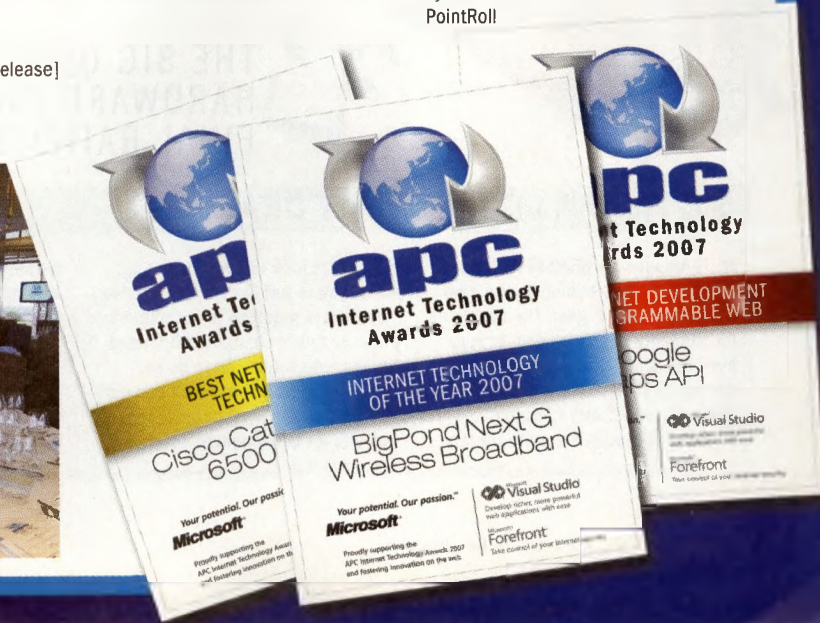
🏆 Google Analytics
Mint
Omniiture SiteCatalyst
WebTrends Analytics 8

RICH MEDIA

🏆 DoubleClick DART Motif
EyeBlaster
Eyewonder
PointRoll



Ross Fowler, MD,
Cisco Systems
Australia and New Zealand.





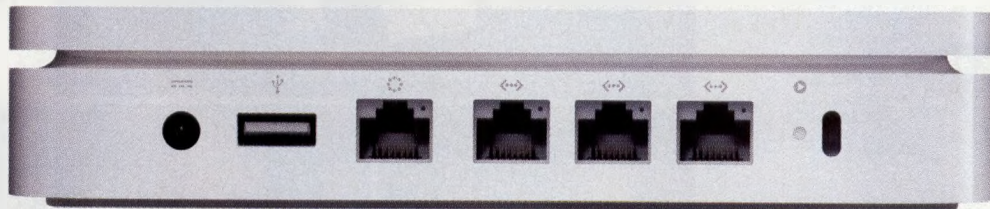
Draft 802.11n

Nathan Davis takes a look at the technology behind the new Draft-N standard — and tells you what you need to know before you buy.

Wireless networking is, admittedly, a significant joke in comparison to its wired counterpart. Unless you're very much fortunate, slow speeds and unreliable connections are both the norm and bane of wireless networking.

That's all set to change, we're told, with the new wireless superstar called 802.11n.

Currently in its late draft stage, the draft of 802.11n, or "Draft-N", is already finding its way into products all over the excitable market. However, as a draft, it isn't yet ratified as a complete



▲ **Apple's Airport Extreme: one of many Draft-N devices on the market.**

standard — that's due to occur in around a year's time, during the first half of 2008 (but more on that troublesome issue later).

The main advantage of 802.11n is its higher throughput. It boasts tantalising speeds of up to 540Mbit/s, while sporting a more typical 200Mbit/s of data throughput. As such, it could very well be a decent wireless contender to replace that tangle of Ethernet cable.

It operates on the same frequency as the previous wireless standards — 2.4GHz — but with the added ability to jump to the 5GHz band.

802.11n achieves the greater throughput over the previous wireless standards by including a technology that's called MIMO, or Multiple Input Multiple Output. As you might guess, MIMO consists of multiple receiver and transmitter antennas, and, with these additional available radio streams, more overall data can

be pumped through at the same time.

On top of MIMO we have channel bonding, in the more flexible 5GHz range. Because there are more available channels in the 5GHz band, channel bonding splices together two otherwise separate 20MHz channels in order to transmit double the amount of data over what appears to be a single 40MHz channel. This is comparable to a RAID 0 — or striped array — of hard drives. Perhaps not coincidentally, channel bonding is also referred to as RAIN, or Redundant Array of Independent Network interfaces.

The old schoolers will be familiar with modem bonding, or, as we like to call it, "dial-up on crack". This is much the same concept.

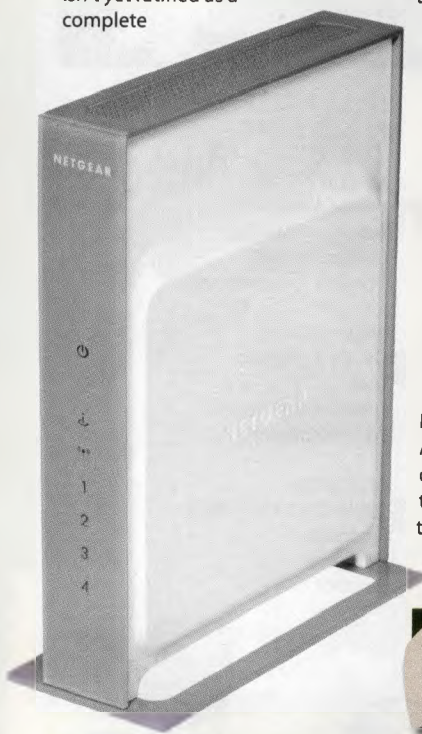
Aside from the increase in throughput performance, another benefit of 802.11n is notably less power consumption — Intel claims up to one hour can be gained on a laptop.

Both MIMO and channel bonding are also the two major reasons why 802.11n features a greater maximum operating range. Currently, indoors, the range goes up to around 50 metres and, outside, this hits a respectable 125 metres.

The 802.11n access points are backwards-compatible and will operate in one of three modes depending on the network environment: legacy mode, in which it supports only the previous 802.11a, b, and g standards; mixed mode, which is legacy mode with basic compatibility for 802.11n; and Greenfield mode, which is pure 802.11n operating solely at its peak performance.

Now, you may be mulling over whether it's a better idea to wait for products that actually support the final ratified standard or just dive into the Draft-N deep end.

Well, it's a very exciting wireless technology, that's for sure, but its Achilles' heel is that it's based on a



THE BIG QUESTION IS WHETHER DRAFT-N HARDWARE CAN BE UPGRADED TO THE FINAL RATIFIED STANDARD

SO, YOU'RE GOING TO BUY DRAFT-N?

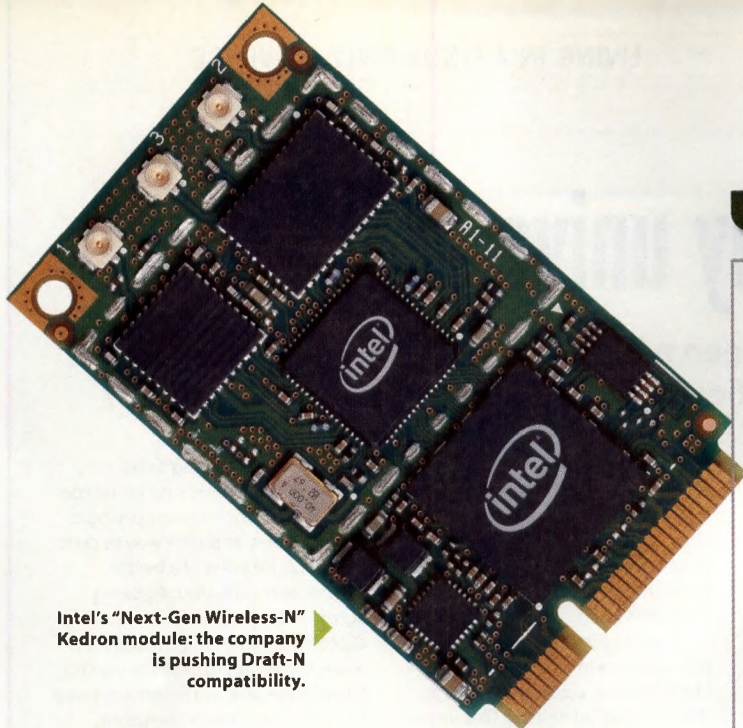
Wi-Fi Alliance-certified Draft-N gear should, at a bare minimum, function with other Draft-N gear. The degree of functionality you can expect to see, however, is up in the air, so you might do best to stick with the one brand. Intel's "Connect with Centrino" initiative, although quite proprietary,

is a valiant idea worth considering. According to Jeff Fulton from Netgear, "Where it is practical to accommodate possible future changes in firmware, Netgear will endeavour to do so." These updates, he says "will be made available on the www.netgear.com web site for customers to download."

We suspect this is what most manufacturers will attempt to do; however, none are currently willing to guarantee that this is possible.

ASUS is seemingly the only company that has produced some form of Draft-N upgrade guarantee. It's announced that it will freely

upgrade its customer's Draft-N hardware, either through a firmware update or hardware upgrade — as long as the hardware was purchased on or before the 31 December 2006. This probably rules you out, but if another manufacturer waves a similar flag, it would be a safe bet.



Intel's "Next-Gen Wireless-N" Kedron module: the company is pushing Draft-N compatibility.

draft. Even though it is one of the final drafts, Draft-N products still walk on thin ice, as there is simply no way to know whether they will be fully compatible with the final 802.11n standard.

Inherently, manufacturers can't wait — such as Intel, with its new Draft-N-based wireless chip it calls the Wireless WiFi Link 4965AGN (or "Kedron").

On why it is supporting a non-ratified standard, Netgear's Jeff Fulton says its "...market research indicated that customers were definitely willing to purchase pre-standard products to achieve their performance needs."

The big question is whether Draft-N hardware can be upgraded to the final ratified standard — and this is where the real problem storms in.

"Intel cannot guarantee upgradeability to the specification since it has not been completed," says an Intel representative. Likewise from Netgear and Apple. Fulton says: "It isn't yet possible to make assurances about this," while Apple's Fiona Martin says, "I cannot speculate on futures."

Such mirrored responses hardly inspire confidence, but the truth really is that they don't know.

According to the Wi-Fi Alliance, the wireless gear that it has certified can achieve a basic level of compatibility across different manufacturers, and this gear includes Draft-N networking products.

Since the first Draft-N products hit the market, the Wi-Fi Alliance

has hosted several conventions called "plug fests". At these conventions, says Intel, "silicon manufacturers all work together to ensure basic interoperability."

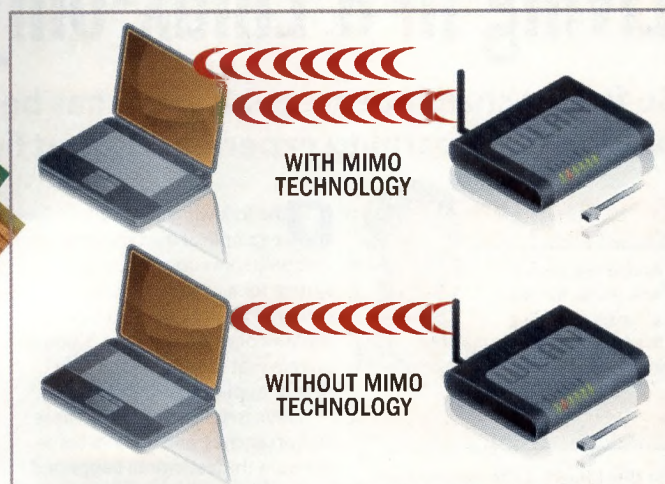
According to Intel, however, these conventions only focus on basic cross-compatibility. So, with support from several well-known wireless access point manufacturers — namely ASUS, Belkin, Buffalo, D-Link, and Netgear — it has decided to brew up its own initiative it calls "Connect with Centrino," which it says will "better ensure compatibility and performance."

"The program goes above and beyond what's already being done by the [Wi-Fi Alliance] by going beyond basic interoperability," says Intel.

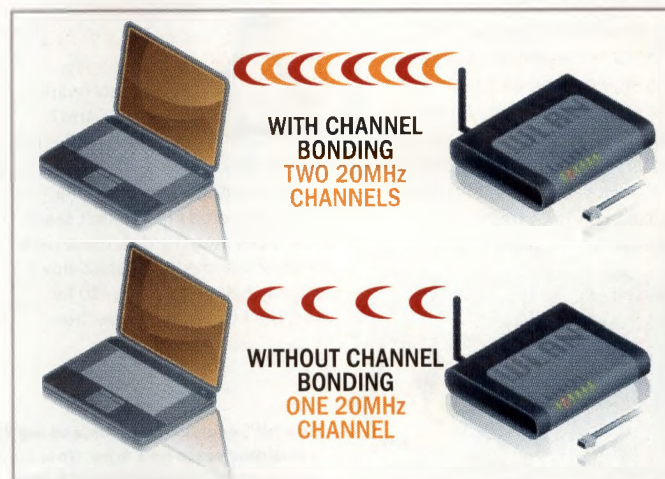
Of course, this doesn't solve the main issue of future compatibility — there is good reason for ratified standards, one of which includes maximum performance, regardless of the brand. If you're happy to stick with products with Intel's proprietary seal of approval, then it shouldn't be a problem — at least until you try to connect to an "outsider" Draft-N network. Apple, for example, isn't after Intel's green light.

In conclusion, 802.11n is almost certainly the future of wireless LANs, but that future is about a year away, as these Draft-N products jump the ratification gun. If you must take the risk, just make sure you're prepared to dish out more money for the real deal when it arrives. **BT**

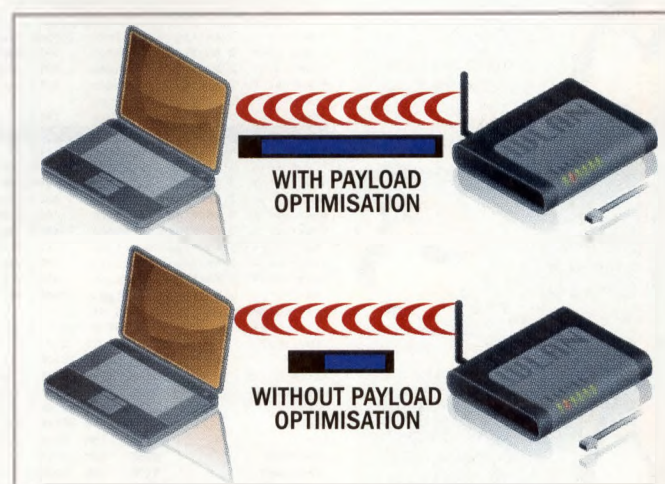
HOW 802.11n WIRELESS WORKS



Multiple Input Multiple Output (MIMO) technology uses multiple radio streams to transfer more data.



Channel bonding combines two 20MHz channels to transfer twice the data.



Payload Optimisation delivers more wireless data per transfer.

Living in a Linux-only universe, part 8

So far the challenge to go all Linux has been a hit-and-miss affair, but it's also been a great learning experience. What lies in store for *Ashton Mills* this month?

ASHTON MILLS

Ashton has been a tech journo for over 12 years, including five years with APC.



THE RATINGS

In this project we're making the assumption that Windows does all that we need — and we're seeing if Linux and open source software measures up. Perhaps that's not an entirely fair place to sit; however, as the de facto in operating systems for which everyone is familiar, it's our best basis for comparison. So here's how we'll rate the experience of going Windows-free:

OPTIMAL

Passes with flying colours. The task could not only be completed, but better or easier than under Windows.



PASS

No problems. The task can be completed exactly as under Windows.



IFFY

When a task could only be partially completed or completed but not without issue.



FLOP

Not possible to complete at all. (Probably not a good thing.)



The following is a good example of the type of issues that only show up after using a system for a while. Windows has plenty of these types of quirks, not the least of which is a more "sluggish" system that seems to occur over time as applications come and go.

Linux is not exempt from these sort of glitches, and one I've come across in the last month happened to do with my ever decreasing amount of free space.



MYSTERIOUS MISSING SPACE

Now, naturally, as more software is installed and I create more files in my everyday work, I'm going to be using more disk space. However, even as I deleted files, I didn't seem to be reclaiming the disk space back. A stint of video editing (see below) certainly helped this space to be used, but I didn't realise just how

little space I had left until Ubuntu told me it couldn't save a file because there wasn't "enough free space". This, on a 10GB partition in which Ubuntu and OpenOffice initially used around 2.5GB. How could this be?

Now, being familiar with Linux, the cause wasn't hard to find — like Windows, Ubuntu defaults to "backing up" all deleted files into a "Trash" folder, so that they can be undeleted. Checking my "Trash" directory, hidden under the home folder, I had 7GB of data over the past seven months that could be deleted. As a whole, the "Trash" folder idea is a nice one, except for the following:

- When Ubuntu told me I had run out of space, it didn't tell me I happen to have almost 7GB of data in Trash that could be deleted to free up space (and didn't offer me the option to empty it).

- There isn't a Trash icon on my desktop. Kinda hard to even realise

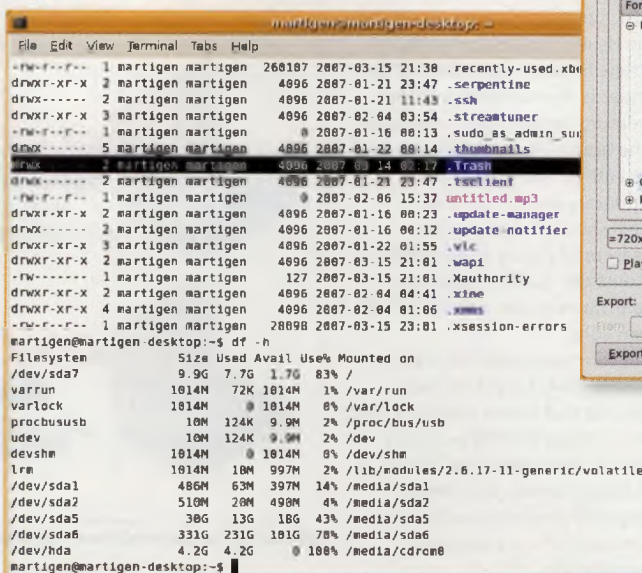
you have trash waiting to be emptied when there's no visual cue and, when it comes to emptying it, no easy point-and-click way to do it.

This is, for want of a better phrase, *bad form*. Ubuntu being automatically set up to mirror deleted files into a Trash directory is one thing, but to give the user no knowledge of it and no obvious way to empty it is a major oversight.

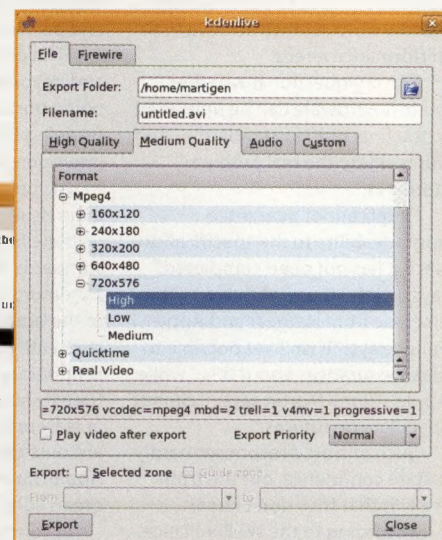
For me, knowing the problem, it was easily fixed by changing to the "Trash" directory at the command line and running an "rm -rf *" to clear it. Instant 7GB of free space.

For the average Windows user, new to Linux and trying to use it as a replacement for Windows (with little knowledge of the Linux directory structure — which the GUI is supposed to make irrelevant for you), they'd be left scratching their head (and searching forums for how to recover their disk space). *Come on Ubuntu, this isn't rocket science*. Overall, not the least bit impressed.

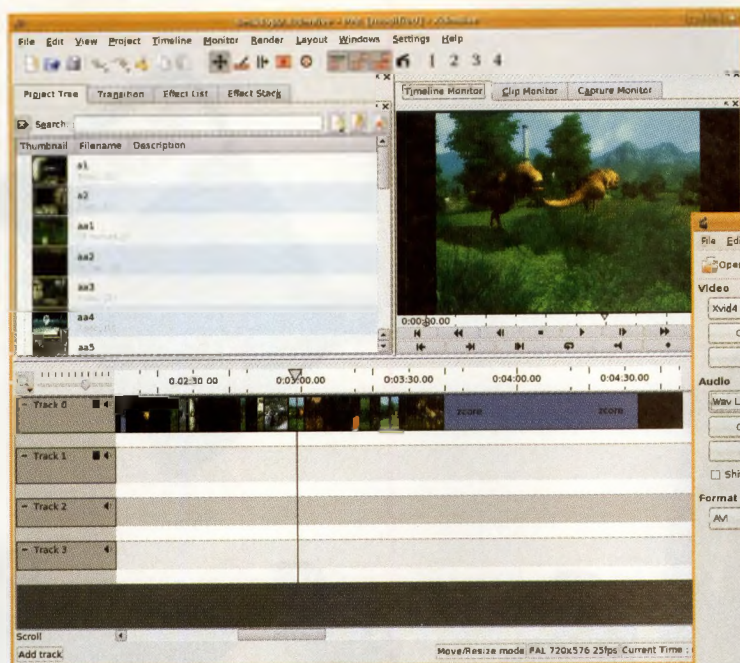
The "df", or disk free, command shows the remaining space on a drive. Note the highlighted and normally hidden ".Trash" folder.



```
martigen@martigen-desktop:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda7        9.9G  7.7G  1.7G   83% /
varrun          1014M   72K 1014M    1% /var/run
varlock         1014M    0 1014M    0% /var/lock
procbususb       10M  124K   9.9M   2% /proc/bus/usb
udev            10M  124K   9.9M   2% /dev
devshm          1014M    0 1014M    0% /dev/shm
lrwx             1014M   10M   997M   2% /lib/modules/2.6.17-11-generic/volatile
/dev/sda1        486M   63M  397M  14% /media/sda1
/dev/sda2        510M   20M  490M   4% /media/sda2
/dev/sda5        30G   13G   18G  43% /media/sda5
/dev/sda6        331G  231G  101G  70% /media/sda6
/dev/hda         4.2G   4.2G   0 100% /media/cdrom0
martigen@martigen-desktop:~$
```



Exporting the video requires no knowledge of arcane encoding commands.



Though still in development, Kdenlive does most everything you need for video editing.



Avidemux is the master format conversion tool, with basic cut and paste for video too.



VIDEO EDITING

With the prevalence of cheap digital cameras, most of which can record movies as well, home video editing is on the rise. So much so that Microsoft puts a huge emphasis on this functionality for Vista; and say what you will about Microsoft — when it comes to the home user, it has its finger on the pulse.

Linux is no stranger to video editing — and quite literally, its encoding tools are top notch and used regularly in the commercial sphere for professional work such as movie studios (and frequently in conjunction with proprietary Linux-based tools).

Hollywood aside, basic and free editing tools for stringing together movies with a sound track and effects are quite well-developed under Linux, but the better ones are still the commercial products. The options for freely downloadable tools include:

- Cinerella
- Pitivi
- Kdenlive

And, to perhaps a lesser degree, Avidemux, which is a superb format conversion tool which can also do



LINUX IS NO STRANGER TO VIDEO EDITING — ITS ENCODING TOOLS ARE TOP NOTCH AND USED REGULARLY IN THE COMMERCIAL SPHERE

basic cut-and-paste work for video segments.

Unfortunately, I couldn't get either Cinerella or Pitivi to run, as they required Debian-based packages outside the Ubuntu repository that, even while I had most of the essential files, still needed dependency libraries I couldn't source for Ubuntu. This left Kdenlive, which did install and work fine.

In fact, Kdenlive is a remarkable tool. Taking a little experimenting to get the hang of, once set up it's as featured as any commercial equivalent — as a non-linear editor you can drag video segments anywhere along a timeline, with multiple tracks, and apply against a musical track to quite easily create a flowing video within a few minutes.

Naturally, it also sports a range of special effects, such as transitions modes, but the most important facet that interested me was the quality and range of encoding options — no point

making the master movie of a lifetime, only to be limited to poor-quality — and limited encoding features.

And Kdenlive delivered here too, actually taking the guesswork out of the plethora of encoding options — here you simply select your target format from the "Render" menu: high-quality DVD or DV for digital video, or a range of medium-quality encodings using Quicktime, Real Video, Flash, MPEG and, of course, MPEG-4. Alternatively, you can export the movie direct to DVD.

Even though the version of Kdenlive I used is at a tentative 0.4 version, it was extremely stable and every feature worked as described. Eminently useable. In fact, I've become a video editing convert because of this tool, finding any reason I can to build my own movies!

Overall, it's good to see such a powerful and free video editing suite for Linux, but it's a little

disappointing the other options of Cinerella and Pitivi, both of which have in their own right earned high acclaim, couldn't install in Ubuntu due to a lack of required support packages. Hopefully Ubuntu will latch onto this and place importance on providing these in the Ubuntu software archives — as Microsoft has shown, this is an important facet of the future desktop system, as users increasingly play with their digital media for the home and family, and for Ubuntu to demonstrate and be a viable desktop alternative, it needs to do this, too.

So, if you haven't played with Kdenlive yet, I highly recommend giving it a go! [BPC](#)

NEXT MONTH

- The most important functionality of a desktop PC today — games! Is Tux built for interactive entertainment?



EXPLODING

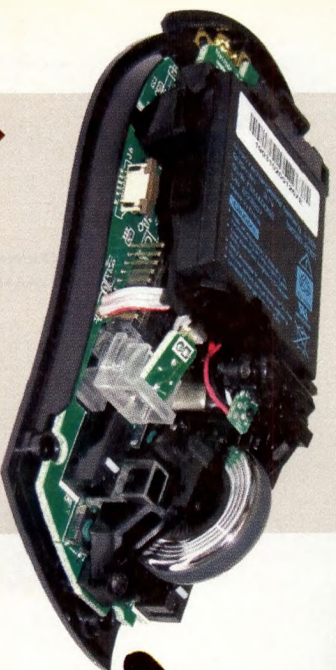
exploding tech



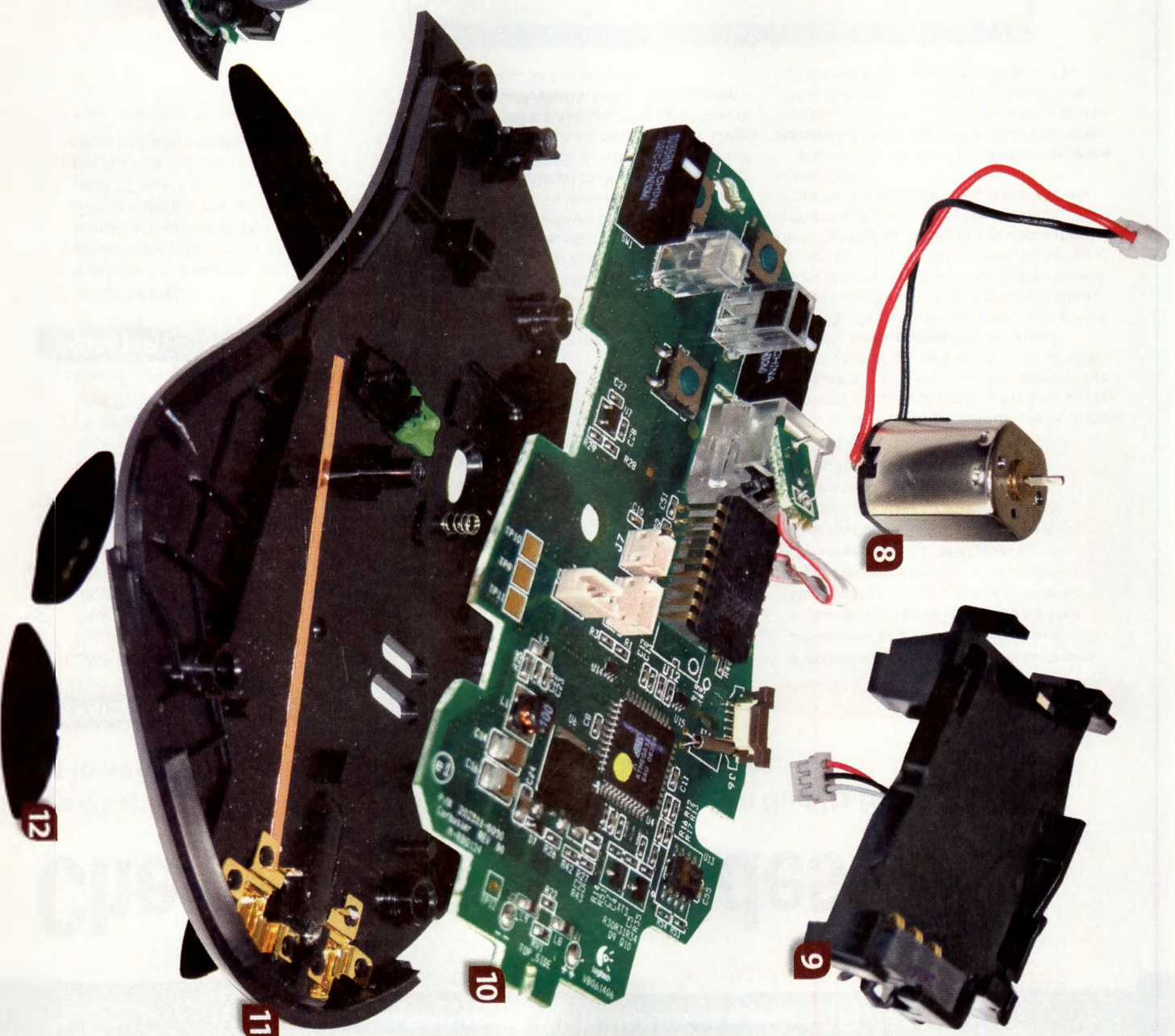
This month, we're exploding the Logitech MX Revolution mouse — its MicroGear precision scroll wheel is designed to enable greater user navigation control with two modes: free-spin and click-to-click.

Logitech MX Revolution

- 1 Outer-shell casing.
- 2 14g machined alloy wheel component of the MicroGear precision scroll wheel. The heavier wheel allows free-spinning for up to seven seconds.
- 3 Casing for electrical switch.
- 4 Rechargeable Li-Ion battery — a four-stage level meter on the mouse's exterior indicates battery life.
- 5 Electrical switch which attaches to precision cam.
- 6 Hinge which attaches to wheel chassis.
- 7 Precision-moulded chassis which supports the scroll wheel.
- 8 Miniature low-power motor to retract the ratcheting mechanism (in order to allow the wheel to spin safely).
- 9 Battery tray.
- 10 Circuitboard.
- 11 Underside casing.
- 12 Rubber feet.



Under the hood: Logitech moved to the weighted wheel design as standard rubber/plastic wheels were too light for free-spinning.





Cheap Vista upgrades

Don't splash out on Vista's Ultimate Edition — you can find its features at lower cost elsewhere. *Mike Williams* shows you where.

WHAT'S COVERED

SAVE MONEY ON VISTA

If you buy a version of Windows Vista that's anything less than the Ultimate Edition, then you'll find that it's missing important features. But don't plunge your hand into your pocket just yet. This tutorial will show you how many of the key new features in Vista can be replaced for free, or at low cost, simply by installing the packages on this month's cover DVD.

INSIDE INFO

UPGRADE VISTA

Many of the programs you need to complete this tutorial are on this month's APC cover disc. They are located in the Tool Kits section, under "Windows Vista". Not all the programs are included due to space and other constraints.

Having read about all the great new features in Windows Vista, you're probably eager to try them out. But it's not so simple. Vista comes in several different editions, and most leave out something important: the flashy Aero UI, backup tools, encryption, parental controls, Media Center, Movie and DVD Maker. And opting for the all-in-one Ultimate Edition will cost you \$750 as an upgrade, \$350 more than Home Basic.

There's no need to splash out big money, though. Install the freeware on our cover DVD and in many cases you'll get better functionality than Vista's Ultimate Edition, for a lot less cash (and in many cases, nothing at all).

USER INTERFACE

Vista Aero is the stylish new look for Windows, with gorgeous, glass-like, translucent effects; you'll have seen it in countless screen shots. But Aero is practical, as well as pretty. Flip 3D, for instance, replaces the bland Alt+Tab icons of Windows XP with thumbnail images of all open windows, displayed in a clever three-dimensional view. So Vista Home Basic users might be disappointed to discover that their edition doesn't include it. What's more, the full Aero interface won't work on any edition unless you've got a compatible graphics card (DirectX 9; 128MB of RAM; WDDM driver; Pixel Shader 2.0 in hardware; 32-bits per pixel).

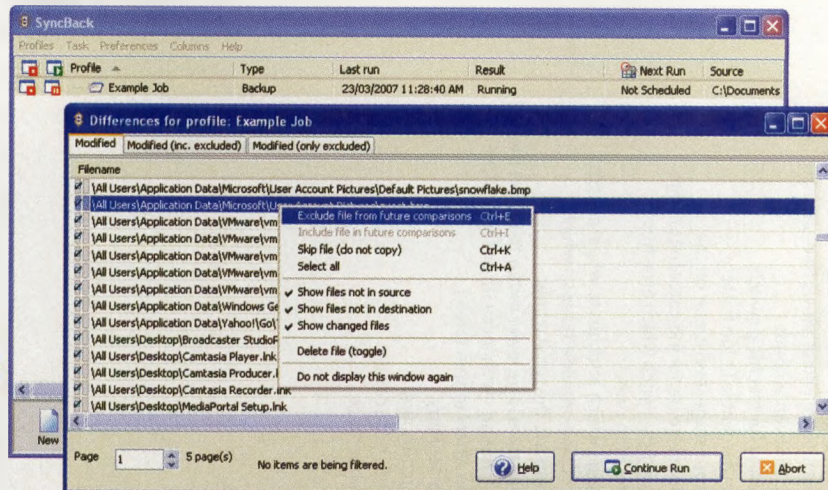
HANDY TIPS

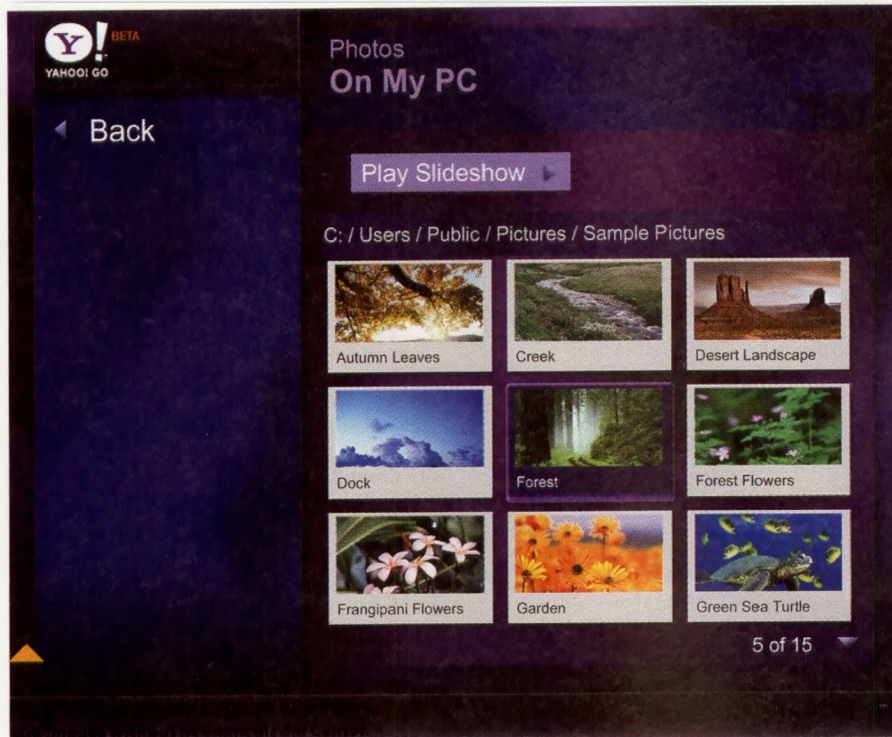
If you find an application that looks like a good replacement for a Vista feature but it won't run on the new operating system, there are a few things you can try. Run it as an Administrator (right-click on the shortcut, select "Run as"). Don't run components as Windows services if you have the choice. Or try running it in the Compatibility mode for an older version of Windows (right-click the shortcut, select Properties > Compatibility).

We suspect freeware solutions to both these problems will appear soon, so the best way to save cash is just to wait for a few months. If you can't wait, though, we'd replace Flip 3D with TopDesk (www.otakusoft.com/topdesk). This ultimate Alt+Tab replacement displays thumbnails of all open applications, either in Vista-style 3D or more conventional 2D. You can also tile all the windows, or just those belonging to the current application, with a single key. It's very configurable, supports multiple monitors, and only costs around \$18.

Meanwhile, Stardock WindowBlinds (www.stardock.com) is the answer to all your user interface requirements, with its ability to skin just about every aspect of the Vista GUI. You can use the built-in skins to add Aero-like

Who needs Vista's backup functions when the freeware on our cover disc is this good?





transparency to your desktop and windows, or create new ones for yourself. And that's not all. WindowBlinds also has a large community of users just waiting to get creative and design a new look for Vista, and by the time you read this they should already have produced some excellent new skins, free to download of course. This is the most expensive shareware tool here at around \$24, but also arguably the best; even Microsoft goes to Stardock for help with visuals, and if you want to improve your Vista desktop style then there's no better program around.

BACKUP AND RECOVERY

Look for an integrated backup tool in most versions of Windows and you'll be

disappointed. There's either nothing at all, or you get a hopelessly limited utility that's no real use to anyone. While Vista seems to remedy this, it all depends what edition you get. Vista Home Edition doesn't provide a scheduled backup, while even buying Home Premium won't get you the new System Image Backup and Recovery.

There are some good free tools around, but they only work if you turn off Vista User Access Control (Control Panel > User Access Control and Family Safety > User Accounts, turn the User Account Control on or off, click Continue and uncheck "Use User Account Control..."). This compromises security, so you might not want to go that far, but that's your call.

HANDY TIPS

The Vista editions are such a mass of different features that even Microsoft doesn't have a clear table telling you which version has what. If you plough through the Vista section on its site then you'll find most of the relevant information, though: start with the Compare Editions page (<http://snipurl.com/18u5c>), and pay attention to the footnotes for potential "gotchas".

If you decide you can do without UAC, DriveImage XML (on the cover DVD) will handle your imaging backup needs. It can create a browseable image file of a drive, or clone one drive onto another, surprisingly quickly. The program will complain it can't use the Shadow Copy Service because Vista Home doesn't provide it, but should still provide usable images regardless.

Meanwhile, the freeware version of SyncBack (on the cover DVD) handles your file-based backup needs, with scheduling, powerful filters, compression, backup to network drives and remote FTP servers. And upgrading to SyncBackSE gets you faster compression and backups, enhanced encryption and incremental backups, all for a very reasonable \$37.

ENCRYPTION

The business editions of Vista support a new feature called BitLocker, enabling your entire system partition to be encrypted. A typical option will see you prompted to enter a password before the PC will boot. The result is a system that's much more difficult to crack. Even if someone steals your system, takes the drive out and installs it in another PC, it won't make any difference. The contents will still be encrypted, and no one will be able to read them unless they know the password.

Reproducing BitLocker completely with the Home version of Vista isn't easy because it

ADVERTISEMENT

Samsung SyncMaster 206BW

Samsung Electronics Australia has released two new widescreen monitors with Windows Vista Premium Certification. Intended for widescreen market, the 20-inch model (SyncMaster 206BW) and a 22-inch model (SyncMaster 226BW) will be available from March 1st 2007, and will have a **RRP's of \$599 and \$899.**





HANDY TIPS

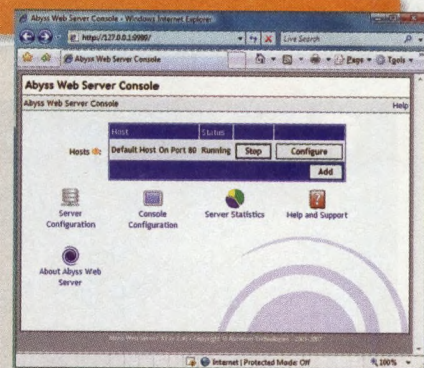
Windows Meeting Place is a handy new collaboration tool in Vista, replacing the old NetMeeting utility. (Unless you buy Vista Home Basic or Premium, which enables you to watch meetings, but not to take part in them.) You can still run NetMeeting, though: just download it (www.microsoft.com/windows/netmeeting/), create a shortcut to the program, right-click this, select Properties > Compatibility, and run it in Compatibility mode for Windows NT 4.0 (SP5). Even then, however, it may be impossible to get remote desktop sharing to work.

DO THIS...

INSTALL A WEB SERVER

Having your own server is very convenient if you're developing a web site or want a straightforward way to share files with friends or colleagues. For the purpose of our Service Pack, we recommend the Abyss Web Server (www.aprelum.com or download it from this month's cover DVD). It has a tiny footprint (1MB disk space; 4MB RAM) yet loads of features, including native support for ASP, NET, HTTP/1.1, CGI/1.1, ISAPI, SSI and bandwidth throttling.

The Abyss Web Server is a lightweight yet powerful tool and an ideal addition to the Vista Home and Premium editions.



requires hardware support, but there are ways you can get close. DESlock+ (www.deslock.com) is one of the best. This clever tool works transparently at the folder level: if you drag or save a file there, it's encrypted; drag it out, it's decrypted; and log out of DESlock+ and it vanishes, meaning snoopers won't even realise you've hidden anything.

DESlock+ even enables you to store your login key on a file, then move it to any USB drive. Unplugging the drive logs you out of DESlock+ automatically, hiding your encrypted files and folders — so intruders won't be able to access them without it.

REMOTE DESKTOP

Vista's Remote Desktop works much as it did in Windows XP, enabling you to access a PC from across the network or even the internet. This is very useful if you want to access an important file, check an email that you received yesterday, or just help someone out by fixing a problem remotely. Unfortunately, it's also restricted in a similar way to Windows XP, in that Vista Home Basic and Premium only come with the Remote Desktop client. They can be used to access other PCs with Remote Desktop running, but can't be accessed themselves.

The XP solution is to install a third-party program, our favourite being UltraVNC (<http://ultravnc.sourceforge.net>). But major changes in Windows Vista mean that many of these applications no longer work. One core problem is something called Session 0 Isolation. In Windows XP, the system services used by remote access tools were able to handle interactive logins, and ran in the same login

session as the locally logged-in user. But Vista runs services in Session 0, away from applications, a major security improvement, but it breaks many remote access tools.

There are other issues with UltraVNC that prevent it from working, but if you have another remote access tool, then applying a tweak or two could result in success. This will start on installation, where you should avoid installing the remote access server as a service. Make sure that the firewall allows traffic on whatever port you're using, and that Windows Defender won't object to your server. Run the server as an Administrator — right-click on the shortcut for the option — to ensure it has all the rights it needs.

Too much hassle? You're probably right, especially as LogMeIn's free service (www.logmein.com) works with Vista already. So if you prefer the simple life, then we'd suggest opting for LogMeIn as your remote access tool of choice. If that's not quite powerful enough for your needs, then try something like UltraVNC in a few months' time, when hopefully it will have a Vista-compatible program available.

MULTIMEDIA

Windows Vista sees the end of Media Center as a product in itself; instead it's now bundled as an application with the Home Premium and Ultimate Editions. They also benefit from Vista's version of Movie Maker, and enable you to burn to disc with DVD Maker. Unfortunately, both Home Basic and the business editions leave out these tools — another hole to be filled by the Unofficial Service Pack.

Surprisingly, Media Center is the easiest of the applications to replace. If you're mainly interested in the media organisation side — photo sharing, playing videos and organising music — try the free Yahoo! Go for TV (http://sites.mobile.yahoo.com/go/tv/get_started). It's a beta but surprisingly capable. As you'd guess, it supports TV tuners as well, although not too many just yet.

For a more ambitious package, try Media Portal (www.team-mediaportal.com). This supports lots of hardware and all the main TV standards. It has an electronic program guide with time-shift recording and lots of media organisation tools. The number of features is impressive for a free product, and we've included it on this month's cover DVD.

Coming up with a video editor proved more of a challenge, especially if you're not looking to pay anything. Avid FreeDV (www.avid.com) is a capable package, but doesn't support Vista yet. We'd recommend that you opt for the AVS Video Editor instead (www.avsmedia.com). It's able to capture video from many sources and file formats, apply 40 different effects or 284 transitions, and burn the results to DVD, ready for sharing. The trial version adds a logo to the centre of your movie, but has no time limit, so you may use it as long as you like. If you do decide to pay, it'll only cost around \$50, which is a very good deal considering the features on offer.

A Vista Home Basic upgrade instead of the Ultimate Edition will save you \$350. Even if you buy every relevant shareware tool here, you'll only pay around \$130, and that's for software delivering a lot more functionality. **BTIC**

SPOTLIGHT ON...

IRREPLACEABLE FEATURES

Many of the extras you get with Windows Vista Ultimate aren't as valuable as they appear, and can easily be replaced at no — or very low — cost. But we have to be realistic, and point out that this isn't true of everything. In other words, if you opt for a lesser Vista Version, then there are some features you'll always miss. Vista Home Basic, for instance, only supports five simultaneous peer network

connections (the other editions allow 10). Both Vista Home Basic and Vista Home Premium enable you to join a workgroup, but not a domain. Neither versions are suitable for serious networking, and there's little anyone can do about it.

In addition, Vista Home basic only supports one CPU (although that can have multiple cores). The 64-bit version can only access 8GB of RAM,

as against 128GB for the Ultimate Edition. This isn't important right now, but in a couple of years, who knows?

We would recommend you investigate exactly what's in each Windows Vista Edition before you buy. Paul Thurrot's SuperSite has everything you need (www.winsupersite.com/reviews/winvista_02.asp).

Make your own game



Want to be a game creator? Now you can with the full version of *The Games Factory Pro*. Jason Davey shows you how.

WHAT'S COVERED

● SNOWBOARDING ANTICS

In this tutorial we show you how to make your own snowboarding game for the Windows platform. The aim of the game is to navigate your snowboarder down the slopes of the Alps, ensuring you jump over any dangerous rocks and trees you might encounter.

REQUIREMENTS

● THE GAMES FACTORY PRO

This software is provided on this month's cover DVD and is used to create your games.

● SNOWBOARDING.GAM

This is the library file on the cover DVD containing all the game's graphic files. The Sound and Music folders contain added effects for your game.

RESOURCES

- The Games Factory creators' site features multimedia, game-creation and developer tools, of which you can download free demos. You'll also find a Resources section that suggests useful books, as well as a long list of downloadable tutorials that are sectioned into New User, Intermediate and Advanced. (www.clickteam.com)
- The Daily Click is a game creator's community site that offers downloads, useful links, reviews, articles and game previews. You can also browse the site's forums for advice on game creation. (www.create-games.com)
- If you're after further reading material on game creation, then take a look at *Make Amazing Games in Minutes* by Jason Darby (ISBN 1584504072).

Game creation is a tricky process, one that requires you to juggle many different disciplines. To aid the process, you'll find a complete copy of *The Games Factory* on this month's cover DVD, but before starting out, we recommend taking a look at the PDF manual that comes with the product.

Once you have installed the software, copy the file *SnowboardinG.gam* into the Libs directory on your PC. Depending on which drive and location you install it, it will need to be copied to the *Gfactory\libs* folder location.

SETTING THE SCENE

Launch *The Games Factory* and go to the Storyboard editor. You'll see an empty box with the number 1 next to it: click on it. This takes you to the level editor and you are now in Frame 1. This is where our game will take shape, but right now, it's just a blank screen.

The first task is to insert our ready-made graphic objects on to the frame. Click on the library selector and select the imported library *SnowboardinG*. A number of images are displayed on the left-hand side of the screen. Using the mouse, you can drag and drop objects on to the frame.

You can find out the name of any of the objects by hovering your mouse cursor over the item for a few seconds, at which point a handy reminder will pop up on screen detailing the object name. In our snowboarding game, this consists of the "piste", covering the entire frame, the "player", who should go in the centre at the top of the screen, and "rock" and "tree4", which you need to put outside the frame, on the left-hand side of the screen.

We now need to create a counter, score and lives object; these will be used within our game

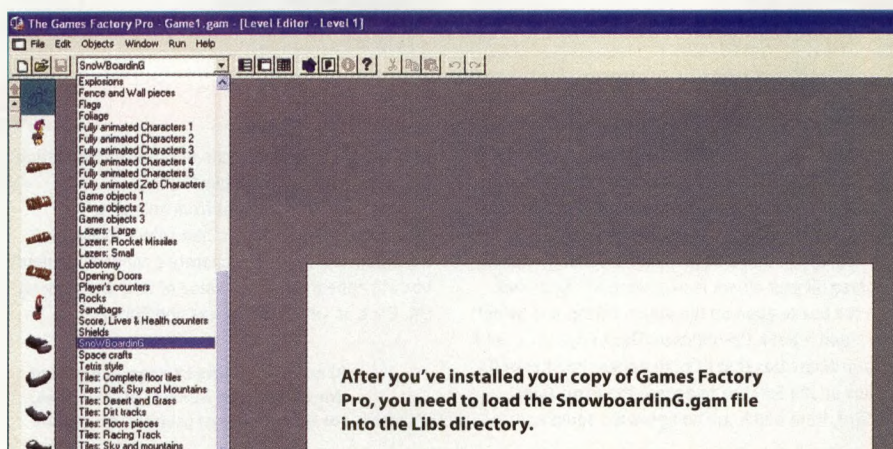
HANDY TIPS

There are many ways to improve the game. Here are a few to try: add new obstacles; have another surfer come in, just to bother the player (he could lose lives if hit by the other surfer); and try changing the speed and creation of obstacles along with the time. You could also create a title screen by customising another level, and a score sheet. You'll find ready-made images to work with.

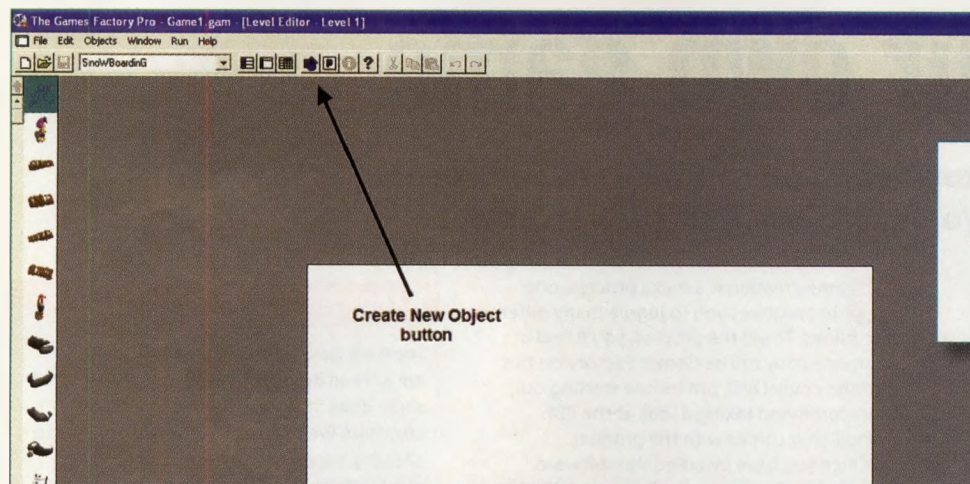
to control how it plays. The counter will be used to speed up the game at a certain point, the score will keep a track of the current player's score, and the lives object will hold the current number of lives.

To create a score/lives/counter object, click on the "Create new object" button. You then need to select the score object (which is displayed as the numbers 123). Once you've clicked on the image, you'll see that the mouse cursor changes to a crosshair. Left-click somewhere on the top left-hand corner of the frame to select it. Click on the "Create new object" button again, but this time select the "Lives" object: this looks like three people standing next to each other. Place this object on the top right-hand corner of the frame.

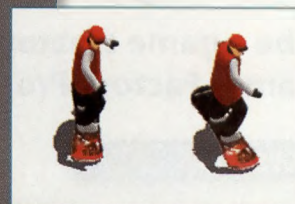
We now need to create a counter object. Click on the "Create new object" button again, but this time select the Counter object. This object's button picture is an hourglass. Once you click on the frame, a dialog box appears. Click on the drop-down list for "Display as" and select Numbers. Click on OK and place the counter outside of the playfield so it isn't touching any part of the game area.



After you've installed your copy of *Games Factory Pro*, you need to load the *SnowboardinG.gam* file into the Libs directory.



You can use the 'Create new object' button to make a counter for scoring and to keep track of the number of lives a player has during the game.



Along with the main character's physical design, you'll need to invest time detailing his movement details.

We need to name the counter, so right-click on the small graphic icon that represents it on the frame and select "Edit Name and Icon". Type in the name Speed, and click on OK.

CREATING THE PLAYER

To turn these components into a game, we need to control the snowboarder character. First we're going to make him move. Click with the right mouse button on the Player object, and choose the option "Movement / Select movement". In the next dialog box, choose the "Bouncing ball" movement. Then choose "Initial direction" and unselect all the directions by clicking on the button "No directions". Then choose the bottom direction; it must be the only one that is selected.

At the moment, all the player will do is move in a downward direction, which won't allow the user to control him in any way. We also need him to stay on the screen, otherwise the game would end very quickly.

Go to the Event editor by clicking the button in the tool bar. Our surfer has a ball movement, but in fact is controlled by the player with the arrow keys. The first thing we have to do is to fix its position on the screen. Click on "New Condition" and select the icon that looks like a spanner, called Special. Select the "Always/ Never" menu icon and select Always. Next, right-click under the player icon — on the same line as



TO TURN THESE COMPONENTS INTO A GAME, WE NEED TO CONTROL THE SNOWBOARDER CHARACTER

the Always condition — and select "Position/ set Y co-ordinate". On the position dialog box, enter the number 80, then click on OK.

Now we're going to test the left arrow key, and make the player turn left. First, check if the user presses the left arrow key. Next, add a delay of 1/10th of second, then check to see whether the player is too far on the left:

Repeat while 'Left Arrow' is pressed.

Click on the new condition text and then select the mouse and keyboard icon. Select the repeat while key is pressed — this will then bring up a dialog box. Press the left arrow key:

Every 00'-10

To add a delay of 1/10th of second, we need to insert another condition in the same box as "Repeat while...". To do this, right-click on "Repeat while left Arrow is pressed" and a

menu box appears. Select Insert to insert a new condition. Select the timer object, and then select Every. A timer dialog box will appear. Put 10 into the 1/100 box and remove the 1 from the seconds box. Click on OK.

X (Player) is facing direction 'Left'

The X stands for negate. This means the condition does not meet the required statement. For example, imagine our condition stated there are three apples. If we negated this condition it would change to "There are not three apples", and so the action would run every time there were more or less than three apples. To set a negate condition, you first create the condition and then right-click on it and select Negate. Insert a new condition on the same event line, and select Player, then from the pop-up menu select "Direction/Compare direction of player".

The direction box will appear, which will need to read Left. Take the down direction away and add a left directional arrow. Click on OK.

DO THIS...

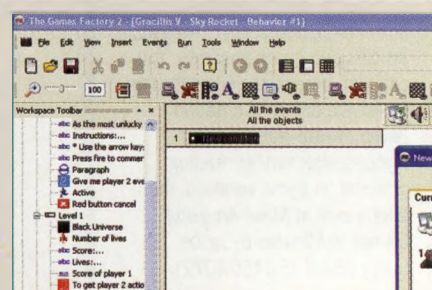
CREATE A RANDOM NUMBER

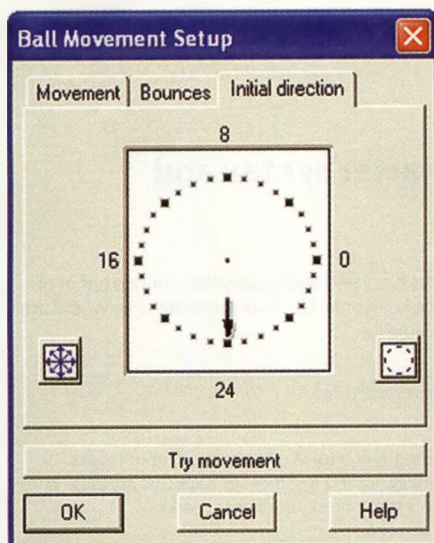
Random numbers can be used in many varying game techniques. For this game we use them to pick a random area on the screen to display a tree or rock. To create the action you'll need to find the condition that states "Every 1 Second". Move across till your cursor is over the tree, right-click on the box to open up the action editor, and select Position > Set X Co-ordinate. This brings up a Set X Co-ordinate box that has the default number of 0. Click on the Edit box to access the Expression editor, from which you can produce complex

calculations in your program or retrieve information from your objects on the playfield.

Click on "Retrieve data from an object". Select the Spanner object, and select "Generate a Random Number". A "generate a random number" box will appear, enter the value of 640 and click on OK. Click on OK on the Expression Editor.

Random numbers can be a useful tool for varying the number of questions, or the number of graphics on screen.





When you've finished detailing your character's movement and dynamic variables, use the 'Try movement' button to see how they work in practice.

last bit of code will change the animation of the player to look like it's moving to the left when the user presses the left key. Run the program and try it out! As you'll see, by combining conditions you can start to pull together a very complex game.

Now we need to follow the same process for the "Right Arrow" key, with the same code.

SETTING BOUNDARIES

You'll notice our surfer can go out of the playfield, the visible area of the screen. We have to check the player coordinates to ensure it stays on the screen. Click on "Add condition", select the player object, and choose "Position/Compare x Position to a value". You'll then need

HANDY TIPS

You can also save your creations to the internet using the Vitalize plug-in. This plug-in is a free program that allows you to place a TGF file into Internet Explorer and then play it on the web. Anyone on the web can download the plug-in and then run your creations within their browser.

subtraction of the speed counter to its Y position. Once at the top of the screen, the tree will be destroyed. (Note: you'll find the Random option in the special object — see Create a Random Number on the previous page). Continue setting things up by doing the same thing with the rocks. The events are very similar.

To make everything move, we have to change the "speed" counter based on the timer. The bigger the value, the faster the obstacles will be. Use the code in the Projects file: you should see the obstacles rushing towards you.

PLATFORM GAMES

To avoid these obstacles, we're allowing our boarder to jump over them. We play a sound when our character jumps: you'll find this sound in the Sound directory. We also need to detect the collisions between the trees and the boarder.

First, check that objects are overlapping; check that the player is placed before the rock by checking the Y coordinates, then check we're not jumping. If these conditions are satisfied, subtract one life and restart the level. Follow this template for the Rock to control the Tree:

```
If (player) is overlapping ( Rock )
Y position of (player) <= Y(' Rock ')
X (player) animation Jumping is playing
(Player 1) : Subtract 1 from Number of Lives
Restart current level.
```

These two events check the player against the obstacle, and subtract one life each time a collision occurs. We now have to check the number of lives against zero, and end the game when the player runs out.

WE ALSO NEED TO DETECT THE COLLISIONS BETWEEN THE TREES AND THE SNOWBOARDER

You'll then need to negate the condition, so right-click on the condition and select Negate.

We now need to create an action on this event line, so move to the right of this event until you are directly under the player object and right-click. Select Direction > Select Direction from the pop-up menu.

CALCULATING MOTION

Click on the "1+1" icon (Use a calculation) and click Edit on the "Select a direction" dialog box. Click on the "Data from an object" button, and then choose the player icon. A pop-up menu will appear. Navigate to Animation > Current direction value; this will place the following code in the expression calculator:

```
Dir('player')
```

At the end, type in -2 and then click on OK. The

to specify the comparison — in this case, less than or equal to, or greater than or equal to.

Next you'll need to add two separate conditions, then add an event to each condition. Click on the player event opposite the first condition (X position of player <= 0). Select Position > Set X coordinate > OK from the pop-up menu. Do this again for 640; to save time just drag the event down and edit it. If you now run the program you'll see the player no longer leaves the playfield.

DECORATING THE WORLD

A good piste needs trees, so let's add a few. Every second, we're going to create a tree in the bottom of the screen, then fix its horizontal position at a random value. At the same time, we'll add a few points to the player's score. This tree will go up on the screen, thanks to the

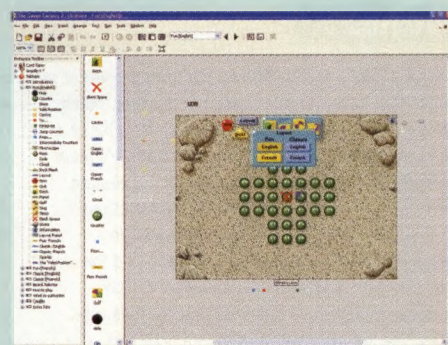
SPOTLIGHT ON... THE MAIN EVENT

Event-driven game design is all about prediction — working out all the possible cases that the player may be involved in, and combining the reactions to create a coherent world. Here, it can be as simple as making sure the player character moves when you press a button, or something as complex as an Othello game. No, you can't easily create the game in the traditional way, but tricks such as firing out shots and having their targets react appropriately to the resulting hit can quickly simulate something that's close enough.

In addition, you'll have noticed during the tutorial that while the settings available to you

initially seem limited, they're merely templates to build your game around: our snowboarder isn't the bouncing ball he's initially created as, nor does the basic game engine necessarily know the difference between jumping over a rock and running into it face-first. Only through experimentation will you find out how much The Games Factory can do, and how best to spin it in new, fascinating directions.

The settings in The Games Factory may seem limited at first, but by continual experimentation, you can spin your game in new directions.





Power searching

Avoid information overload: *Karl Hodge* demonstrates smarter syntax and Google's hidden features.

WHAT'S COVERED

REFINE YOUR RESULTS

Google's advanced features help you create search queries that hone in on the best hits. We show you how to put together Boolean searches that will return the results you want. You'll exclude unwanted sites, domains and keywords and restrict your search to specific dates. We'll also look at built specialist search terms that target file types, cached data, specialist sites and even separate parts of a page.

Everyone who uses the web knows how to search. You go to your favourite search site — which for the majority is Google — enter keywords and hit the button. Piece of cake. But what if we told you that you could easily improve your results with a few carefully chosen additions to your vanilla keyword search? When you search for sites on Google, a straightforward search returns many results you don't need. Google has extra features built in that will help filter out the flotsam and jetsam. In this issue we focus on how to use them.

The quickest way to improve the quality of your Google search is to click the Advanced Search link. This takes you to a more complex search page full of extra filters. You can search for exact phrases, filter out keywords, set date parameters, look for pages in specific languages and in predetermined file formats. You can also restrict your results to a certain domain or within a series of specialist databases, including public domain program code and Google's new archive.

BOOLEAN QUERIES

Google's advanced features help you reduce the number of poor hits by filtering them out before the search is run. The first few entries in Google's advanced search form constructs Boolean queries for you. Boolean syntax provides you with formulae for expressing sets of data, using logical operators. You can use this syntax directly in Google's front-page search box to improve your results without having to go to the advanced form. Let's say you want to find pages with the terms "smoke" and "fire" — in Boolean syntax you would enter the keywords like this:

smoke AND fire

That query would return only the pages that contain both keywords. Now let's imagine you're

less fussy and want pages that contain either of the keywords. The Boolean syntax you would use would be:

smoke OR fire

This query returns a less refined set of results. Finally, to find instances of a specific phrase and only that phrase, use quote marks:

"there's no smoke without fire"

These are old school search engine methods. Modern search engines often apply some Boolean formulae without the syntax. Google, for example, automatically and invisibly places the AND operator between search terms you enter on the front page.

It's more useful to exclude specific keywords. Google and other engines return lots of commercial results. Try searching for the key words "new pram". Some of the first results returned are for eBay and Amazon. Now try this:

new pram -ebay -amazon

You've removed all trace of them from your results.

There's more to the web than HTML pages now, and Google indexes lots of different document types. In Google's Advanced Search form you can choose to filter according to file format using a drop-down menu, but you can also specify document types in the standard search box. Google recognises 13 main file types, including all of the Microsoft Office document types, Lotus, PostScript, Shockwave Flash and plain text files. You can search for any of them directly by using the modifier "filetype:[filetype extension]". For example, if you want to find PDF

DO THIS...

SEARCH THE PAST

Google's cache facility allows you to find content in pages that have, for one reason or another, fallen off the face of the internet. However, it's a bit of a blunt instrument. You can only view Google's most recently cached copy, and not a specific version. But <http://archive.org> has no such restrictions.

Founded in 1996, the free archive is, in a sense, the internet's backup system. Using the site's Way Back Machine, you can search the archive for numerous older versions of favourite sites. The results are returned in a series of

columns sorted by year with rows linking to snapshots of the site on a monthly basis. For high-traffic sites like bulletin boards, news sites and blogs, it's a handy tool for finding lost content.

The Internet Archive also stores public domain video, audio and software. Anyone can create their own account to upload material to these sections of the site. You can then link to the stored files directly from your own sites and blogs. It's ideal for podcast serving if other options are too much for your pocket.

Internet Archive
waybackmachine

Enter Web Address: <http://www.apcmag.com> All Tools

Searched for: <http://www.apcmag.com>

Note: some duplicates are not shown. See All.
* denotes when site was updated.

Search Results for Jan 01, 1998

Year	Month	Pages
1998	Jan	3 pages
1999	Jan	9 pages
2000	Jan	195 pages
2001	Jan	20 pages
2002	Jan	15 pages
2003	Jan	22 pages

Dec 03, 1998 * Jan 25, 1999 * Feb 29, 2000 * Feb 02, 2001 * Jan 21, 2002 * Feb 0
Oct 12, 1998 * Jan 25, 1999 * Mar 01, 2000 * Feb 02, 2001 * Mar 26, 2002 * Feb 01

Be careful what you write. The Internet Archive has been backing up the web since 1996.

SPOTLIGHT ON... FOLKSONOMY

The way the web is indexed is changing. Google's great for searching the mainstream web, but it invariably buries the best content under a landslide of sites that have something to sell. If you want pure, informative content, your best bet is to search through the millions of professional and amateur blogs that festoon the information superhighway — and Google is some way behind in that department. One reason for this is that bloggers have found their

own way to classify their content with keywords called "tags". Google doesn't have any specific tag-based search features, but other dedicated search sites and modern media portals do. The leaders are Technorati, del.icio.us and Netscape's revamped web portal. Blog providers like LiveJournal, WordPress and Google's Blogger offer users tagging features too. You will also find tag-based classification being applied to other content, like dating sites, photo

sharing, podcasts and, thankfully, video distribution.

Tags can be added by anyone, which is where the term "folksonomy" comes from. It's a combination of "folk" and "taxonomy", which literally means a "classification system by the people". At the moment, tag searching is an effective way to cut straight to relevant content. But, as it grows as a phenomenon, it may well suffer the same problems as mainstream searching: spam and more spam.

documents about Pilates, you will need to construct your query in this way:

Pilates filetype:pdf

You can also exclude entire file types, using the same Boolean syntax we used to exclude key words earlier:

yoga -filetype:doc

Try the query above and you'll get a raft of results free of Microsoft Word files.

TARGETED SEARCHING

One of the most powerful search modifiers is also the most esoteric — the only way to use it is to enter the commands manually in Google's main search box. Google uses a special algorithm to order its search results. This takes into account the frequency of keywords in the body of a document along with other criteria (like the number of links to a page) that appear in Google's database. However, you can narrow keyword results down to their appearance anywhere in a page's document object model. You can search just the titles of pages, the URL, the main text or in text links that point to the page. This highly specific feature can help you to find the most relevant content for your query. Let's say you want to find pages about herbs. Searching the title, like this:

intitle:herbs

This will only return pages with that term in the title. Other modifiers in this category include "intext:", "inurl:" and "inanchor:". The latter returns pages where the keyword appears in link text from other sites.

The inurl modifier is a direct URL search, but if you want to find how many links there are to a certain site, there's the "link:" modifier. Try this:

link:www.mozilla.org

You'll get a list of all the sites that link to the named URL. This is a handy command to know if you build web sites because a significant portion of Google's PageRank algorithm relies on external links. The more links you have, the higher your site is in search results. In a similar way, you can find pages that are related in some way to a named site — that contain compatible content, using the "related:" modifier.

EXTERNAL SEARCHES

Sometimes you already know good sources for the information you're looking for, but not all web sites have their own search tools. Sometimes those that do aren't up to scratch. A common problem is an inability to deal with Boolean requests. The solution is to search using Google instead, with the "site:" modifier. You can use Boolean syntax exactly as you would with any other search:

"investigator" site:www.apcmag.com

Google also lets you search for selected, specific types of info within its own database: you can search movie reviews using the following syntax:

movie:name_of_movie

Try "music:" to look for band or album reviews. There's also a built-in dictionary or glossary search using "define:word". There are several other specific search modifiers available. Try, typing in:

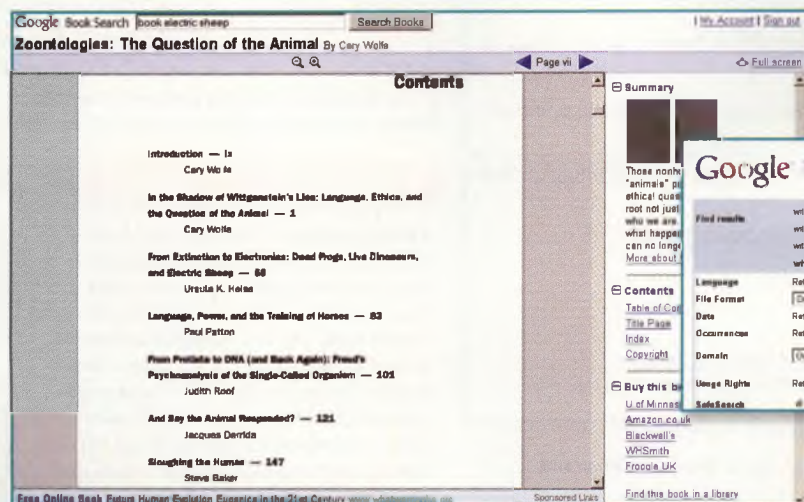
weather San Francisco, CA

This returns a full four-day forecast for the big city by the bay, complete with cute weather icons.

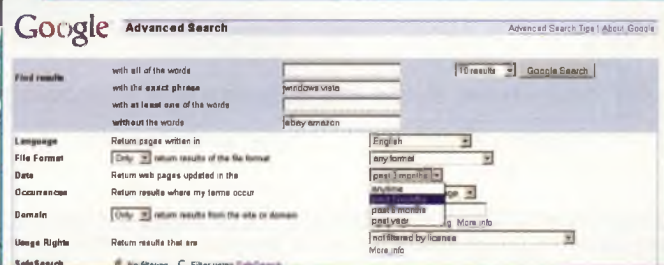
We've left one of the most useful features of all until last. You may have noticed from your casual searching that some results come with the option to use a "cached" link. This is an older version of a page containing the terms you're searching for. What's less well known is that you can go directly to Google's cached version of any page. Use the syntax "cache: site_url", like this in the Google search box:

cache:www.smh.com.au

If the page is cached, you'll be taken straight to it. This tip, like the others in this issue only takes a couple of extra strokes to enter. That's all you need to improve your search results twentyfold. [▶▶▶](#)



Google's advanced search offers a page full of extra modifiers, so you can quickly construct Boolean queries to narrow down search results.



With ambitions to eventually launch a full online library, Google's book search allows you to find and preview selected pages from its database.



Calculate with Google

Dave Jewell explains how to add the functionality of Google Calculator to your applications.

WHAT'S COVERED

● INTERACT WITH GOOGLE'S LANGUAGE CALCULATOR

This small C# program shows how to interact with the natural language calculator built into the Google search engine. It supports a wide range of extensive unit conversions (including currency), and has knowledge of numerous physical constants.

REQUIREMENTS

● VISUAL C# EXPRESS EDITION

This is available for free download from <http://msdn.microsoft.com/>.

Google, as you probably realise, is much more than just a search engine. No, we're not referring to Google Maps, Google Earth, or many of the other goodies that have been rolled out in recent years. We're talking about the way that you can type a mathematical query into the search engine and get some meaningful response back.

In the simplest case, typing "1+1" will give you the expected result of 2. Happily, it gets more exciting; type something like "log (pi^2)" and Google will calculate the log (to the base 10) of pi squared, which just happens to be ever so slightly less than 1. If you want to work with natural logs, use "ln" instead of "log".

Where the built-in calculator gets really useful is in the area of unit conversion. Want to know how many millimetres are in 27.38 yards? Just type in "27.38 yards in mm". Similar conversions are available for area, time, volume and so on.

Google will even cope with some old English measurements: did you know there are nearly 420 pints in a hogshead? We never knew pigs were so big-headed...

The calculator even has knowledge of many physical constants: if you type "1 a.u./c" you're effectively asking for the distance from the Earth to the sun (one astronomical unit) divided by the speed of light (often expressed as "c" by physicists). This will give an answer of around 8.3 minutes, which is the time light takes to reach us from the sun.

We felt that being able to embed this functionality into your own applications would be pretty cool; this month's Workshop is the fruit of our labours. We're aware that Google provides a very comprehensive developer's SDK, but for the

sake of simplicity, we chose to get the job done using the .NET 2.0 frameworks and nothing more.

GOOGLE QUERIES

Just to get the ball rolling, we created a new C# application, adding a couple of text boxes, a push button and a label. We resized one of the text boxes to fill most of the form, set its Multiline property to True — so as to be able to display multiple lines of text — and renamed it "answerBox". The other text box was named "queryText": this is where you type the query you wish to send to the calculator. Finally, the push button kicks off the process by sending the query to Google and displaying the result.

If you've never looked at the System.Net classes in .NET before, they're delightfully simple to use. After a couple of minutes of fiddling, we came up with the code shown below. This code all lives inside the push button's OnClick handler:

```
private void goButton_Click (object sender,
EventArgs e)
{
    string calcRequest = "http://www.google.
com/search?q=" + queryText.Text;

    HttpWebRequest request =
(HttpWebRequest) HttpWebRequest.Create
(calcRequest);

    HttpWebResponse response = (HttpWebRes
ponse)request.GetResponse();

    StreamReader sr = new StreamReader
(response.GetResponseStream());
    answerBox.Text = sr.ReadToEnd();

    response.Close();

    sr.Close();
}
```

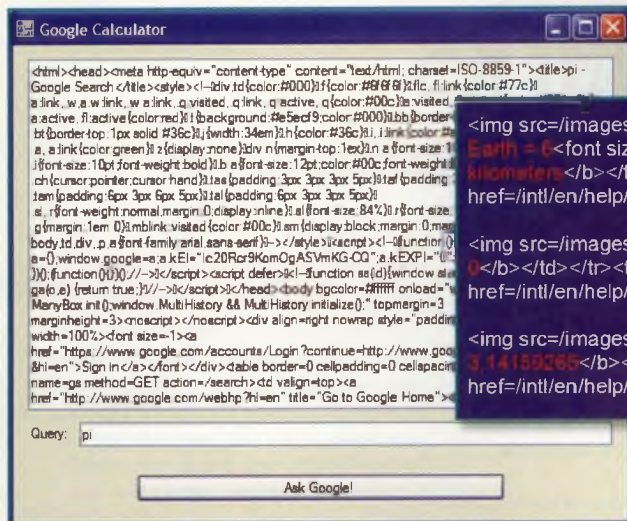
The code starts by building a request to send to Google. Because the calculator is part of the main

HANDY TIP

By interrogating the Calculator functionality in Google, it's possible to easily add a lot of perceived functionality to your application without much work. The code described is a great candidate for wrapping into a reusable component for installing in the Toolbox. Rather than having one text field for the request and another for the response, you could — with a little work — use one control for request and response, deriving your component from the TextBox class.

The screenshot shows the Google search interface. The search bar contains the text "the answer to life, the universe and everything". Below the search bar, the results show "Web Results 1 - 10 of about 2,160,000 for the answer to life, the universe and everything. (0.14 sec)". The first result is "the answer to life, the universe and everything = 42" with a link to "More about calculator.". Below this, there is a link to "The Answer to Life, the Universe, and Everything - Wikipedia, the ...". The snippet for this link reads: "In the story, the Ultimate Answer to Life, the Universe, and Everything is sought using the hypercomputer Deep Thought, however the computer was ...".

A few little jokes are built into the Google calculator. Ask for "the answer to life, the universe and everything", and the calculator responds with "42".



It would be great to get a simple response back from Google, but instead we get back an entire page of HTML. Pi is in there somewhere, though...

```
<img src=/images/calc_img.gif></td><td>&nbsp;</td><td nowrap><font size=+1><b>radius of
Earth = 6<font size=-2> </font> 378.1
kilometers</b></td></tr><tr><td>&nbsp;</td><td>&nbsp;</td><td><font size=-1><a
href=/intl/en/help/features.html#calculator>More about calculator.</a>

<img src=/images/calc_img.gif></td><td>&nbsp;</td><td nowrap><font size=+1><b>1 - 1 =
0</b></td></tr><tr><td>&nbsp;</td><td>&nbsp;</td><td><font size=-1><a
href=/intl/en/help/features.html#calculator>More about calculator.</a>

<img src=/images/calc_img.gif></td><td>&nbsp;</td><td nowrap><font size=+1><b>pi =
3.14159265</b></td></tr><tr><td>&nbsp;</td><td>&nbsp;</td><td><font size=-1><a
href=/intl/en/help/features.html#calculator>More about calculator.</a>
```

Here's the result of analysing three different Calculator responses. In each case, we've highlighted the part of the response that we're interested in.

HANDY TIP

If you're intrigued by the idea of interacting with Google programmatically, we've barely scratched the surface. Point your browser at <http://code.google.com> and you'll find a lot of information on the different programming APIs that are available. Among other things, you'll also find the Google Data APIs — these are currently in beta — for communicating with GData-enabled web services. This is available as a set of .NET classes for integrating directly into a .NET application.

search engine, we have to send calculator queries directly to www.google.com, just as if we had typed a search query into Google's home page.

This raises the question of how we detect whether or not Google successfully parsed our query as a calculator expression, or whether it just gave us a pile of stuff about the radius of the Earth (for example). Fortunately, it's pretty easy to detect a valid calculator response — we'll deal with that shortly when we get on to the subject of parsing the response.

The code simply takes whatever has been typed into the queryText box — if the box is empty then we simply disable the push button — and appends it to the end of the following string: "http://www.google.com/search?q=". This gives us a valid query string for sending to Google. This string is then used to create an `HttpRequest` object that neatly wraps the request.

When we call the `GetResponse` method, the request is sent to Google and a response is received. Finally, we need to create a temporary `StreamReader` object, which provides the response data as a standard `System.IO.Stream` object. Using the stream's `ReadToEnd` method, we can copy the entire response stream into our multi-line answerBox control.

PARSING THE RESPONSE

But wait — there's a problem. As you can see from the screenshot above, what we get back is a



GOOGLE EVEN COPEs WITH OLD ENGLISH MEASUREMENTS: DID YOU KNOW THERE ARE NEARLY 420 PINTS IN A HOGSHEAD?

whole raft of HTML code. This isn't hugely surprising since, as I've already mentioned, we're using Google's primary search interface, and whether or not our query is recognised as being a calculator query, the server wants to give us a whole load of links to other relevant sites, possibly with a few ads sprinkled in for good measure. For example, type in "radius of the Earth" and you'll get back the calculator answer, together with a whole bunch of cosmologically related links.

In order to make sense of all this, we need to somehow parse the response data and extract the part we're interested in. Probably the correct way to do this would be to use the data stream as input to an XML document, parsing the XML document to find the content that we're interested in. We chose not to do this though, as we felt that, in this case, using XML was like using a sledgehammer to crack a walnut. Moreover, in other XML-related solutions that we've seen, the code is just as vulnerable to layout changes at the server end as the admittedly belt-and-braces approach we've adopted here. If you look at the screenshot top-right, you'll see we've analysed

the result of several Google responses in order to find the HTML that's common to all of them. The trick when parsing the server response is to find a substring that's very close to the answer data and — obviously! — always present.

Armed with this information, we came up with a couple of routines called `parseResponse` and `stripEmbeddedTags`. The `parseResponse` routine tracks down the location of the answer data within the HTML stream that we receive from Google. It then passes the isolated answer data to the `stripEmbeddedTags` method. This method scans through the resulting string, removing all embedded tags that are found within the answer.

Why would you find embedded tags inside the answer? The explanation is that Google is attempting to apply some pretty formatting to the displayed result, including the use of superscripts to indicate exponents when displaying information in scientific notation.

With the benefit of hindsight, a better approach might be to leave some of those tags in and display the result in an HTML-aware control. Alternatively, you can convert to a plain text equivalent. <http://www.codeproject.com/cs/miscctrl/htmlrichtextbox.asp>

DO THIS...

Although our Google Calculator does a great job most of the time, sometimes it goes spectacularly wrong. For example, try entering "mass of the Earth" into the query box, hit Enter and you'll get the result shown below:

mass of Earth = 5.9742 × 10²⁴ kilograms

If you repeat the exercise using your favourite browser, you'll quickly realise the problem. Or

CALCULATING PROBLEMS

problems actually — there are two of them. First, the character sequence `×` represents the Unicode multiplication character — you can fix that by appropriate use of the `System.Text.Encoding` class. The other problem is a little bit trickier: the original response contained HTML tags to superscript the power of 10²⁴ in this case — and we've just stripped those tags out. In time-honoured tradition, this is left as an exercise for the reader, but let's first check out www.codeproject.com/cs/miscctrl/htmlrichtextbox.asp.



Personal bookmarks

Jim Liddle shows you how to build your own social bookmarking site and synchronise it with the del.icio.us APIs.

WHAT'S COVERED

MANAGE BOOKMARKS

Create a personal bookmark manager using Scuttle, and have it automatically synchronise with the online service, del.icio.us. Make sure you keep your bookmarks to hand, even in the event that the internet throws a fit.

REQUIREMENTS

WEB HOST/LOCAL HOST

You'll need Apache, PHP, a MySQL database, and space to store your Scuttle installation.

SCUTTLE

Download it from www.scuttle.org.

PHPDELICIOUS

Get your installation ready to hook up to the main online bookmark manager.

If you haven't used the online social bookmarking service del.icio.us, you will almost certainly have heard of it. It's a central storage point for your bookmarks, giving you instant access from any device with internet connectivity. More interestingly, it allows you to group them into specific "folksonomies", using a powerful tagging system. The result is simple, but incredibly useful.

Tags are keywords, used to classify content. They have become one of the killer features of so-called web 2.0 sites, making it easy to not only browse through large amounts of information, but also to create large amounts of collaborative information. As users post their own bookmark content and tag the entries, the aggregation of the entries allows them to easily find information on topics they are interested in. The success of del.icio.us shows the value of this approach. (It nets around 100,000 bookmark entries a day.)

However, this approach to bookmarks does have its downsides. For starters, if the site itself is down, you have no access to your bookmarks. Additionally, because of the sheer numbers of users accessing the service, at times it can be incredibly slow. For this reason alone, it's useful to have a secondary store for all your online bookmarks.

Alternatively, you may want more focused results coming up in your searches, to keep your entries private, or to make them the foundation of a different community. You'll find a huge variety of diverse uses for them — as an easy way to tag, store and search entries on a local company intranet, for example, or as a revenue-generating site in conjunction with Google Adwords, enabling you to profit from user-generated content.

THE DIY APPROACH

We're going to implement our own social bookmarks site using an open source project called Scuttle. The purpose of the site is to serve as a backup to a del.icio.us account. Scuttle,

HANDY TIP

Don't worry if your current collection of bookmarks is stored locally. As well as hooking up to del.icio.us, Scuttle offers the ability to take an exported file from either Internet Explorer, Netscape or Firefox and create online entries. The only thing that will be missing is the tags, but you can create these at your leisure later.

currently at version 0.72, is available from www.scuttle.org and is the brainchild of one Marcus Campbell. It's available under a GPL licence and can be hosted on almost any platform that supports Apache, PHP and MySQL.

The beauty of open source is that you can add features and functions that commercial offerings do not have — and of course, contribute them to the project so that others can benefit from your experience. Many unique features of Scuttle have been added in this way, one of which is the ability to have private as well as public posts. Private posts are only viewable by the user who created them and are incredibly useful if you want to post links to sensitive information.

Installing Scuttle is a breeze. Using your web host's database tools — usually phpMyAdmin — simply import the tables.sql file that's supplied with the software to set things up, then configure your database settings in the config.inc.php file.

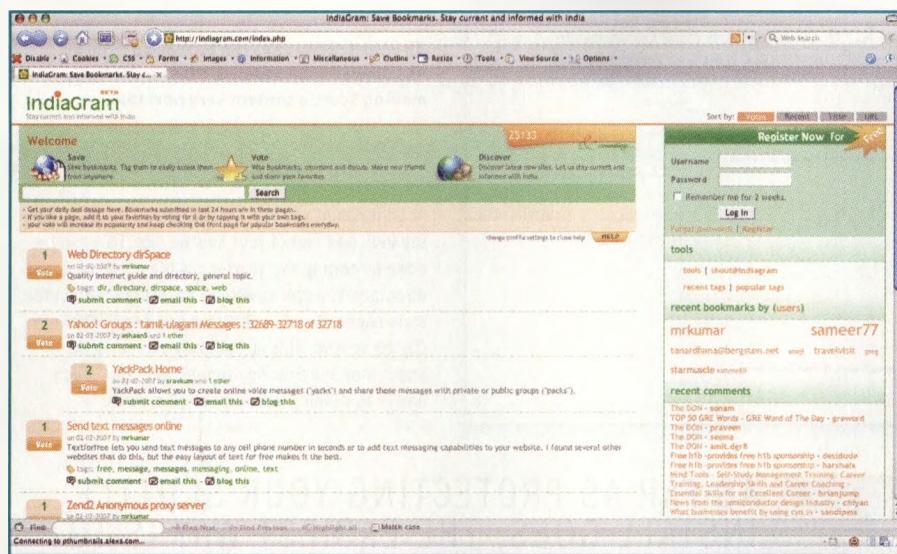
Upload the whole lot to your Apache/PHP server and use your FTP client to CHMOD the /cache/ directory to 777. And that's it — you're done. You should now have a vanilla Scuttle install. If you don't have the necessary hosting space, you can also access all of its functionality from the current hosted version at www.scuttle.org.

WORKING WITH SCUTTLE

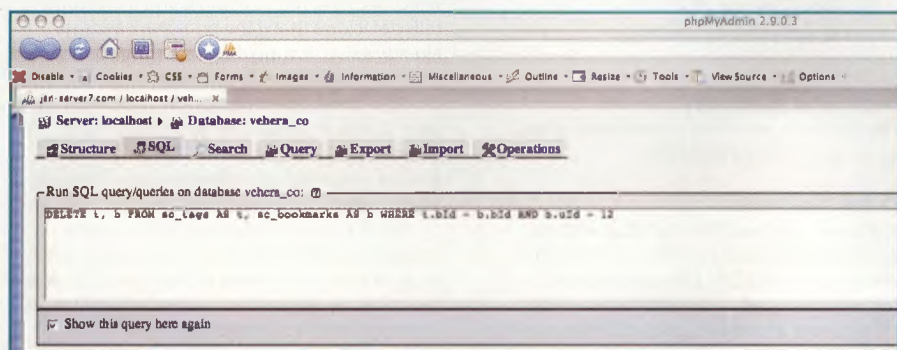
The first thing we need to do is create two accounts; one in Scuttle itself, the other — if you

Similar to del.icio.us, the content of Scuttle is organised and searchable using tags, and can be viewed through a tag cloud.





Indiagram shows the huge potential of Scuttle-based web development. This site has been customised to the point where it's not obviously Scuttle.



TAGS ARE KEYWORDS USED TO CLASSIFY CONTENT – ONE OF THE KILLER FEATURES OF SO-CALLED WEB 2.0 SITES

don't have one already — at <http://del.icio.us>. Copying posts from del.icio.us is easy. Go to <http://del.icio.us/api/posts/all> and log in using your del.icio.us username and password. This generates an XML file containing all your bookmarks. Save it to your PC.

Back in Scuttle, click on Add a bookmark and select Import bookmarks from del.icio.us. Once you've located the del.icio.us XML file, select the privacy settings for the imported bookmarks, click Import and wait a few seconds.

You'll now have a full copy of your del.icio.us bookmarks in your own social bookmarks application, and can use your control over the server to make backups, move the information around, or to run whatever processing operations you like.

The only catch is that this is just a one-off synchronisation: your Scuttle backup won't automatically update as your bookmarks collection grows beyond this initial set. To make

the two programs communicate every time you make a change, we need to use the REST APIs provided. Here, things get more complicated. On the plus side, it's this access to the software that makes creating your own installation such a solid prospect.

CONNECTING VIA API

One of the functions provided by the del.icio.us API is the "add" command, which allows you to programmatically submit a new bookmark. We're going to take advantage of this functionality to automatically add any new posts from Scuttle to del.icio.us.

These lines show the syntax for the http post request with the del.icio.us API, where description, url, and tags are arguments for the call:

```
http://del.icio.us/api/posts/add?description=text
description&url=URL&tags=tags
```

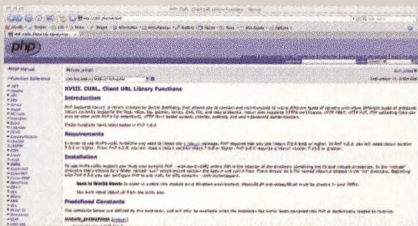
SPOTLIGHT ON...

PHP CURL

PHPDelicious uses the PHP Curl library as a means of calling and manipulating http content.

This is packaged with the regular PHP package but you need to ensure it is enabled. You can ask your host or use the test script available at php.net/curl to check this. If you're using a local server, make sure libcurl is installed on your OS, as PHP is just a glue layer that accesses the underlying libcurl library.

Visit <http://uk2.php.net/curl> for further information on both Curl and PHP.



PHPCurl is used in the PHPDelicious library and needs to be enabled in your PHP install.

You can clean out your Scuttle spam content using an SQL query submitted with the popular MySQL tool phpMyAdmin.

We can see this at work by using an example that you can paste into your browser bar:

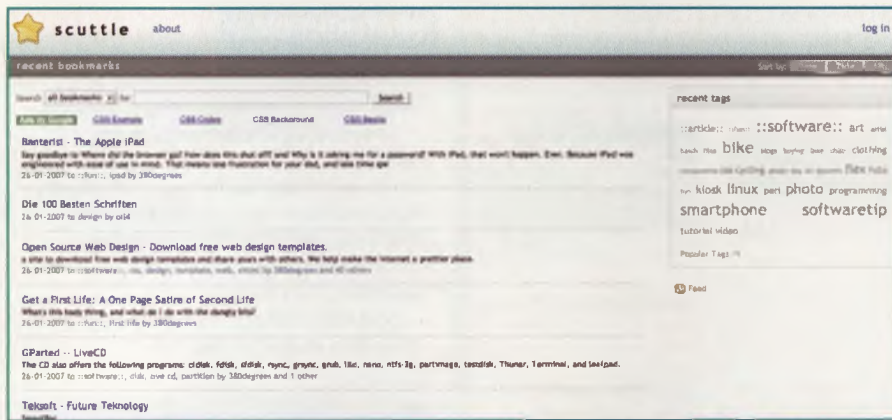
```
http://del.icio.us/api/posts/add?description=APC
%20Home&url=http://www.apcmag.
com&tags=PCMagazine
```

If you now check your del.icio.us account, you'll find that you have a new entry, "APC Home", tagged as a PC Magazine.

First, we need to figure out how to access the del.icio.us API from PHP. Luckily Ed Eliot, a Yahoo! employee, has released a set of PHP scripts called PhpDelicious, via the Yahoo! Developer Network (del.icio.us is owned and operated by Yahoo!). We can use this PHP class to access the del.icio.us API. It provides methods for all of the APIs that del.icio.us supports, including the methods we require for our Scuttle/del.icio.us mashup.

Scuttle uses variables to hold the URL, site and tag information that it either scrapes from sites or which a user manually enters. The relevant code to do this is found in the file bookmarks.php, located in the Scuttle root directory.

The first thing to do is to download PhpDelicious from www.ejeliot.com/pages/5 and install it into your root directory. Edit bookmarks.php in a text editor. We need access to the PhpDelicious class file from the bookmarks.php script, which we can do by adding a requires declaration at the top of the bookmarks.php script:



All your Scuttle links can be viewed from an RSS viewer or on a phone, PDA, or desktop, making Scuttle content very portable.

HANDY TIPS

At some point you will probably want to customise the look and feel of your Scuttle site. This can be done by editing the `scuttle.css` file in the root directory. You can download an alternative Scuttle style sheet at www.splitbrain.org/blog/2006-01/19-scuttle. This is a slightly cleaner style sheet than the Scuttle original, and thus much easier to develop your own shell around.

```
require('php-delicious.inc.php');
```

The Scuttle bookmark information we require is held in the variables `$address`, `$title`, `$description`, and `$categories`. We will reuse the information stored in these variables for our `del.icio.us` post:

```
//Synchronise with Del.icio.us

$PhpDelicious = new PhpDelicious('<delicious
u/name>', '<delicious p/word>');

$PhpDelicious->AddPost($address,
$title,$description, array($categories));

//end of Del.icio.us Synchronisation
```

This is added to the `bookmarks.php` script within the Scuttle Add functionality (specifically, after line 111).

This ensures that every time a post is added to Scuttle, the same post is also added to your `del.icio.us` account.

Next we need to add deletion functionality to synchronise any deletions from Scuttle with those from `del.icio.us`. To do this we need to edit the `edit.php` file in the Scuttle root and add the following lines within the Scuttle Delete functionality, after line 72:

```
// Delete bookmark

$PhpDelicious = new PhpDelicious('u/name',
'p/word');
```

DO THIS...

SCUTTLE SPAMMERS

One of the issues that you find with social bookmark managers is the amount of spam entries that can be created by bots. These can be incredibly damaging, and the only way to deal with these entries is to delete them manually, or lock out the entire site from passing trade.

To do a cleanout, use `phpMyAdmin` to locate the rogue user entry `id` in table `SC_users`. Once you've found this, make a note of it and delete it.



AS FAR AS PROTECTING YOUR SCUTTLE INSTALL GOES, THE EASIEST WAY IS TO ADD A USERNAME AND PASSWORD CHECK

```
$PhpDelicious->DeletePost($address);

//end of delete form Del.icio.us
```

Don't forget to add the declaration for `PhpDelicious`, as we did in the previous step, at the top of the `edit.php` file.

CHANGING TIMES

Right now, our Scuttle installation will add and delete according to the contents of our `del.icio.us` account, but there's one more function we need — handling bookmarks that change after being ported across. Luckily, amendments are handled in almost exactly the same way as our other changes.

Once again, open up `edit.php`, and look for the following lines in the editing functionality — after line 54. This should be second nature by now, but just in case, here's the entire code:

```
//post del.icio.us amendment

$PhpDelicious = new PhpDelicious('u/name',
'p/word');

$PhpDelicious->AddPost($address,
$title,$descripti on,array($tags),"true);
```

You'll notice we used an extra two parameters within the `Addpost` call. The first is the date,

which we have left as default, and the second tells `del.icio.us` that if the bookmark address already exists, it should update the information with the new version we provide.

With these three snippets of code in place, your Scuttle installation is good to go. Your hosted version will act as a full backup and should remain synchronised (the odd network glitch aside).

Of course, this is a limited hack, and one that pays no attention to the users themselves. Anyone you give posting access to on Scuttle will also be given effective access to your `del.icio.us` account, which could turn out to be embarrassing if it's personally linked to you or doesn't represent your actual interests.

You'll need to look into error-trapping code to prevent this from happening, or to activate and deactivate the hacks between sessions.

It also goes without saying that you shouldn't forget how everything is set up. You'll have to revert everything if you decide you need to keep your own bookmarks on a need-to-know basis.

As far as protecting your Scuttle installation goes, the easiest way to handle it on a private server is to add a username and password check via your `.htaccess` file.

This will prevent anybody from even seeing the content, never mind editing it, as well as protecting your bookmarks from the prying fingers of Google, Yahoo! and any other search bots that happen to be in the vicinity.

Outside of direct hacking, you may also be interested in some of the Scuttle plug-ins that people have made available online, including several tools designed to run with `del.icio.us` itself (the advantage of using the same API...).

Visit http://scuttle.org/wiki/third-party_tools in order to see a handful of these in action, as well as a number of links to various sites running Scuttle and plenty more help with getting it up and running (should you encounter any trouble). **ETC**

Build a web site entirely with CSS

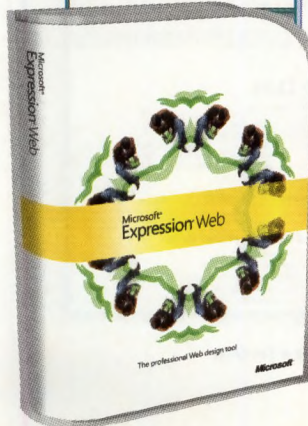
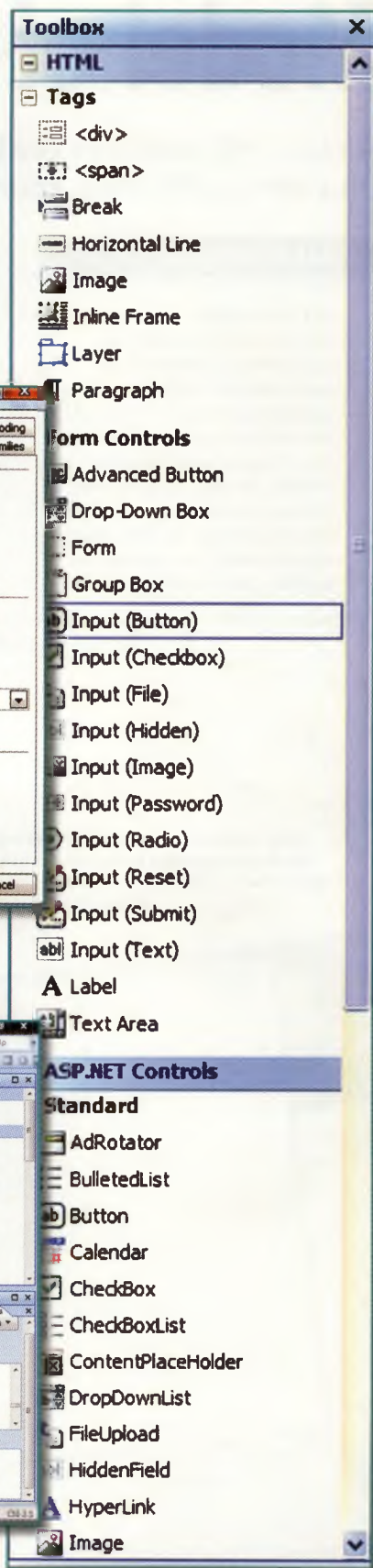
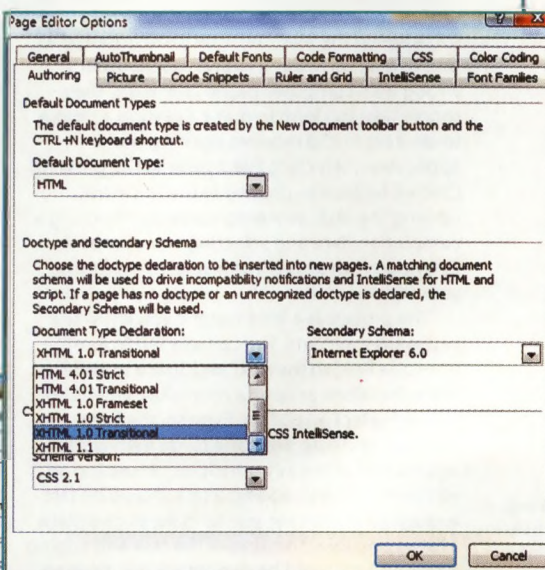
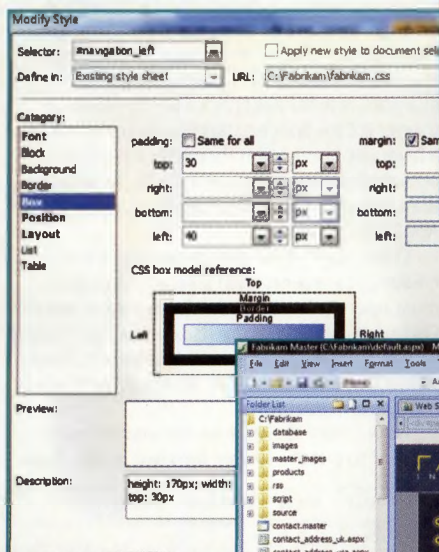
Learn how with APC's guide to using Expression Web, Microsoft's new rival to Adobe Dreamweaver. Go to apcmag.com/expressionweb to begin.

This guide was too big to fit in the magazine, so rather than cut it down, we've taken it online. We'll show you how to build a web site with CSS, using the ultimate CSS design tool, Microsoft's Expression Web, available to trial on this month's DVD disc.

The tutorial leaves nothing to chance. Every step is explained, screen by screen, including:

- Menu systems
- Homepage
- Templates

Learn how to build an entire site using the web's hottest new development tool!





Model of efficiency

Richard Hill explores the best ways to better organise your Mac, and along with that, your life.

WHAT'S COVERED

● GET ORGANISED

Creating to-do lists should be easier than it is — and with the help of Mac OS X, it can be. Enhance your basic iCal setup with the interface system Quicksilver and you can enter a new task in under 10 seconds, complete with a priority setting and a deadline date. We also look at Ghost Action and Actiontastic, two new tools for creating contact-based lists.

iCal provides a basic method for creating to-do lists, but a few extra tools can help turbo-charge your productivity by making task creation faster.

As lives get busier, the checklist has become a natural ally in our quest to make sure everything gets done. But despite the software available, many of us instead rely on scraps of paper, composing short lists to help us remember everything that needs doing that day.

Apple iCal is the most ubiquitous to-do software on the Mac, because it's distributed as part of Mac OS X. But it shows exactly what's wrong with computer-based checklists: they simply take too long to make. Creating a simple to-do item in iCal requires opening the application, selecting File > New To Do, pressing Cmd+K or double-clicking in the To Do list, naming the task, choosing a priority, choosing a completion date and selecting an appropriate Calendar, such as Work or Home, to categorise your task.

The process is a little faster if you know the keyboard shortcuts. You can use Tab to jump from one field to the next and Space to either tick a checkbox or open a drop-down menu so you can select an option. Even so, the time required to create even one to-do item works against one of the key principles of running an efficient checklist: adding a task should be fast enough to encourage you to make as complete a list as possible. Thinking of the task and adding it to your list should be a spontaneous, flowing and, above all, a rapid sequence that becomes an instinctive part of your routine. No wonder we persist with paper.

HANDY TIPS

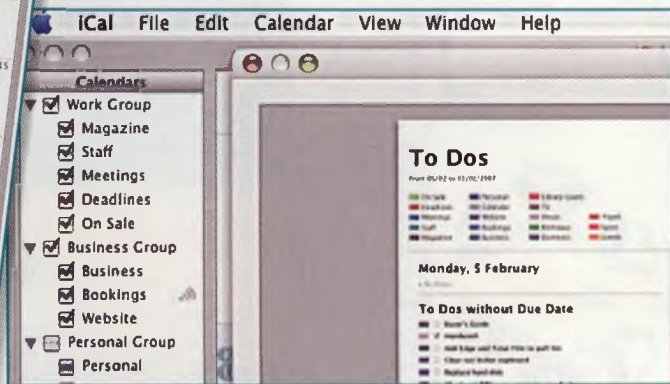
High Priority (www.kudurshlan.net/highpriority) is a rapid way to refer to and tick off items in your to-do list without the effort of opening iCal. It offers a menu item in the top-right of the screen, showing all items for the Calendars that are active in iCal, sorted by priority. When you complete a task, just Cmd+Click the item to tick it off. If you register High Priority for US\$6, you can call up a dialog box for creating to-do items without opening iCal.

INPUT YOUR LIST

Our mission is to make working with to-do lists on the Mac faster and smoother. And you can make a brilliant start with Quicksilver, the excellent interface extension that's free from <http://quicksilver.blacktree.com>. This allows you to activate a keyboard-focused interface through which you can trigger common actions more quickly than through using the standard Mac OS X interface. A common usage, for example, is to invoke Quicksilver (the default trigger is Ctrl+Space), start typing the name of a favourite application then select the Open option that appears automatically: far faster than finding a little-used tool in your Applications folder.

Quicksilver offers an alternative route to creating iCal events and tasks, although you must open Quicksilver's Preferences and tick the Enable advanced features box in the Application area before you can take advantage of it. Then, in the Plug-ins pane, make sure that the iCal module is activated.

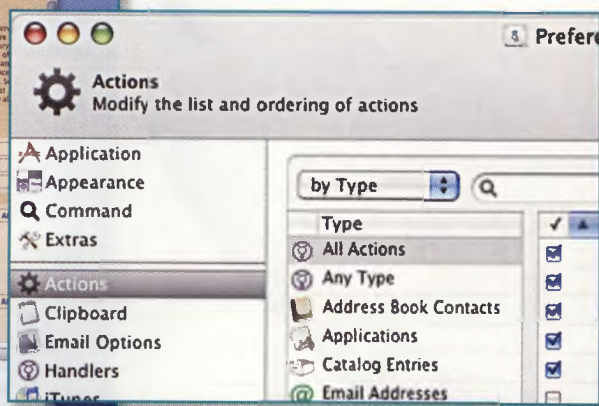
Now invoke Quicksilver and immediately press "." to put the system into text mode. Type



iCal's Print dialog box includes an automatic preview facility, enabling you to customise a to-do list for printout.



Install Quicksilver and activate its iCal support to trigger a task-entry system you can complete in just a few seconds.



To make the To-Do action appear automatically, move it up the list of actions in the Preferences.

your task name and press Tab, then select Create iCal To-Do from the actions list. You can start typing the action name to make it appear faster. Hit Tab again and select your preferred Calendar from the list provided (again, you can start typing its name to highlight it), then press Return to confirm the action. iCal opens automatically if it isn't already active, and you have a new to-do.

To streamline this process, open Quicksilver's Preferences, select the Actions list and move Create iCal To-Do to the top of the list. This makes the action appear as the primary option when you enter text, so you save time not selecting from a long list. Your workflow is now: invoke Quicksilver; type " "; type the task name; press Tab to select Create iCal To-Do; press Tab again; type the first letter or two of the Calendar you want to assign the task to; and press Return. Once you get used to it, this is much faster than entering the to-do item directly into iCal.

TEXT SHORTCUTS

You can get extra speed with a couple of text shortcuts as you type the task name. After pressing " " to invoke text mode, type between one and three exclamation marks, which represent the three priority tiers in iCal. You can

then type the task name as usual. If you then type a date, iCal will interpret this as the due date it should log for that item. Note that Quicksilver uses the US date format, so you should enter 13 March as "3/13". To create the to-do item "Call Chris" with a priority of Very Important and a due date of 28 March, then, type "!!!Call Chris 3/28".

The technique gets some getting used to, but you'll soon find yourself creating a to-do item within ten seconds of thinking of it, without

unnecessary effort on your part.

iTunes allows you to sync your tasks to your iPod: on recent models, the list appears under Extras > Calendar > To Do. iSync, included with Mac OS X, allows you to transfer your list to certain mobile phones, including Nokia, Sony Ericsson, Siemens, Sendo and Panasonic, as well as Apple's own forthcoming iPhone. A full list of devices currently supported in iSync is available at www.apple.com/macosx/features/isync/devices.html.



THE REAL BENEFIT IS THAT YOU CAN CREATE A LIST WITHOUT INTERACTING WITH ICAL AT ALL IF YOU DON'T WANT TO

disrupting whatever else you're doing on your Mac.

Working with Quicksilver means you can generate a more extensive to-do list in less time and with less chance of forgetting to add important tasks. The real benefit is that you can create a list without interacting with iCal at all if you don't want to, then synchronise your tasks to a portable device. This way, your list is at your fingertips when you need it, without a lot of

If you remain wedded to the idea of a daily to-do list on a piece of paper, iCal offers an elegant printing option. Select File > Print to generate the preview window, then select List from the View drop-down menu. You can use the Time Range options to choose which days the list covers; options for today only are offered for speed. Finally, you can choose to print out only selected Calendars, so that you have exactly the tasks you need at the time. [iTC](#)

DO THIS...

ADD CONTEXT TO YOUR TASKS

Once you get into creating to-do items, it's easy to generate a list of dozens of tasks — and it becomes difficult and time-consuming deciding which ones are most urgent. While categorising tasks in iCal can help you filter out tasks, it's more effective to turn to context-based checklists.

Context is simply the place or environment in which each task is best completed. Some jobs can be done only when you're at work, others can be allocated to your next email session or require a phone call. By allocating a context to each task in

your list, you make yourself focus on the tasks that can be completed only when you're in a given location. It's a great distraction-clearing exercise that's a key principle in productivity-boosting guides such as David Allen's *Getting Things Done*.

You can create context-related Calendar categories in iCal, but a new generation of Mac software is designed specifically with contextualised tasks in mind. Actiontastic (free beta from www.kaboomerang.com) and Ghost Action (US\$20 from <http://ghostparksoftware.com>) both enable you to create tasks that you can

list in three formats: as a straight list, grouped into projects and grouped into contexts. You can switch between each format at will to get the list that suits your needs at the time.

Both tools synchronise with iCal so that you can maintain a unified to-do list. Cannily, Actiontastic offers a Quicksilver plug-in that enables you to quickly enter tasks to be stored in the application, using a rapid text entry system similar to Quicksilver's built-in iCal support.



apc downtime

HIGH-PERFORMANCE PLAYTIME

GEAR

BOOKS

GAMES

CHAT



Xbox 360 Wireless Gaming Receiver for Windows

You're not constrained anymore with this wireless receiver for Xbox controllers — it plugs into your PC's USB 2.0 port and lets you use the range of Xbox games accessories (including wireless gamepads, steering wheels and headsets). Range goes up to 30 feet according to the Microsoft people, and it'll work with four controllers and headsets at a time. While the idea of not using a keyboard may be foreign to many WoW and FPS players, others will appreciate the ability to finally nail Commander Keen: Invasion of the Vorticons from their lounge chairs.

CONTACT Microsoft
ONLINE www.xbox.com.au
PRICE \$29.95
VERDICT ★★★★★☆

BluPhones

Believe it or not, some people don't want to look like they've stepped out of *The Matrix* when they don a pair of headphones in public. These are suitably futuristic looking and sound great, but they're not huge, so you don't feel like a dork with two bug bulbs on your head. Why are they so special? These are Bluetooth headphones — listen to music from a compatible Bluetooth phone. When a call comes in you get an alert, and you can pause the music via a button on the headset while you take the call. There's also a microphone embedded in the headset.

CONTACT GEAR4
ONLINE www.gear4.com
PRICE \$129.95
VERDICT ★★★★★☆



Sony Ericsson K550i

If the ridiculously priced K800i camera phone (as used by James Bond) was out of your league, then the K550i may be more your cup of tea. It's still got a Cyber-shot Sony camera, but the price tag is a more reasonable \$299. The camera offers 2.0MP and it's equipped with a blogging function for uploading pictures of drunken celebrities or friends to the net. Other options for distributing embarrassing photos include: transferring via Bluetooth to friends with compatible phones; printing directly to printers using PictBridge; or, transferring to PC. Plus, you can make phone calls.

CONTACT Sony Ericsson
ONLINE www.sonyericsson.com.au
PRICE \$299
VERDICT ★★★★★☆



Variax 300 Series

Along with music mashups, anime toy collections and building a print server, guitars are now a seriously geek-worthy pursuit. These Variax guitars tip the wow scale by emulating the sound of 25 different guitar models — the particular tone of each guitar is selectable via the onboard knobs and you can select alternate tunings electronically (in other words, no fiddling with tuning). The killer is the ability to program it with your PC using the supplied Line 6 Workbench software. Variax guitars are used by the likes of Metallica, Radiohead and a bunch of other big artists.

CONTACT Music Link
ONLINE www.musiclink.com.au
PRICE \$1,099
VERDICT ★★★★★☆

APC
UBER

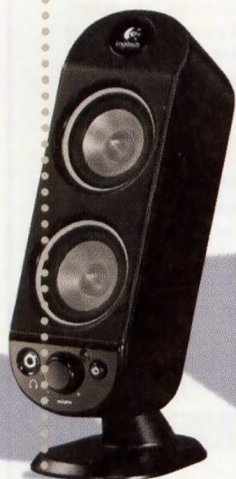
Super cool

APC
1337

Very cool

APC
noob

Uncool



APC
UBER

APC
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Sandisk Sansa c250

Don't get us wrong, we love getting around with the iPod video, but we just can't help feeling that the super-shiny thing makes us look like targets for muggers. There are stacks of flash-memory mini music players out there apart from the nano, including the Sansa. The c250 won't blow you away — the screen isn't great and your photos look pretty ordinary on it — but it's a good-value player considering you get 2GB of memory, an FM radio and a memory card slot. Also, this one's got a removable, rechargeable lithium-ion battery, so no more scrounging for AAA's.

CONTACT	Sansa
ONLINE	www.sansa.com
PRICE	\$179
VERDICT	★★★★☆

Logitech X-230

Sometimes all you need for a great PC audio experience is a 2.1 speaker system. Blasphemous, we admit, but you can get away with a quality 2.1 system like this and still experience heart-pounding gaming or wailing guitar solos courtesy of YouTube. This Logitech bundle gives you a subwoofer and a decent pair of satellites (also wall-mountable). It's all under \$100, which is pretty flippin' sweet considering fancy 5.1 systems could set you back anywhere from \$150 to \$800. The Windows Vista install music will never sound more relaxing.

CONTACT	Logitech
ONLINE	www.logitech.com
PRICE	\$99.95
VERDICT	★★★★☆

Scosche Bluetooth Car Kit

People may look at you strangely when you insist on plugging one of these dongles into your car stereo on long road trips, but it's worth it: they'll soon be patting you on the back for re-introducing them to the wonders of Terence Trent D'Arby's "Wishing Well" — all courtesy of this Scosche gizmo which hooks up your iPod to your stereo. The transmitter attaches to your iPod and the receiver plugs into the auxiliary inputs on your car stereo (if it has any). Unlike FM radio iPod transmitters, Scosche claims this will give you "digital quality" music.

CONTACT	Scosche
ONLINE	www.scosche.com
PRICE	\$359.95
VERDICT	★★★★☆

G-Tech iPod Control Messenger Bag

Yes, it's true: this satchel bag has batteries — they're for the iPod control system embedded into the fabric. You leave your iPod in the bag, and control the songs from the "buttons" on the outside flap (which is pretty Blade Runneresque, if Deckard was a bicycle courier). G-Tech is the company behind these smart bags, and is proud of the fact that it has figured out how to also embed a speaker in the bag as well. Personally, we think this could get pretty annoying on public transport. If you're in peak-hour, stick with relaxing songs and you just might be ok.

CONTACT	G-Tech
ONLINE	www.gtechastralia.com.au
PRICE	\$179
VERDICT	★★★★☆



The Lord of the Rings Online: Shadows of Angmar



Troy "Oorin" Coleman plays one MMO to rule them all.

On 22 March 2007, Turbine Inc. forged a deal with Tolkien Enterprises and Vivendi Universal Games to develop a Massively Multiplayer Online Role Playing Game (MMORPG) based on the literary genius that is *The Lord of the Rings* and *The Hobbit*. Set in J.R.R. Tolkien's Middle Earth, the game runs along a timeline parallel to that of the books. Being unable to play as a member of the ring-bearing fellowship, instead, your adventure unfolds in the events surrounding and coinciding with it. But, during the course of the game, you'll meet and interact with all the Fellowship NPCs: Strider, Gandalf etc (even Tom Bombadil).

To begin a game, a player must create a character. Select from the race of Men, Elves, Hobbits or Dwarves. Choose from a Champion, Guardian, Captain, Burglar, Hunter, Minstrel or Lore-Master as your class: there is no wizard class, but the Minstrel and the Lore-Master do possess magical abilities.

Controlling the game is extremely simple, even for the rank amateur. Standard WASD keys control movement, and holding the left mouse button accesses a free-roaming camera giving a clear view of the environment at all times. The interface has taken influences from the genre's many predecessors, but with a refined simplicity. Morale (health) and Power are indicated in the top left by two coloured bars. Skills are learned abilities which range from advanced combat techniques to life-saving abilities such as 15% faster run rate, or Dire Need, which converts half of the characters' available power into Morale. These can be slotted into a palette along

the bottom of the screen for quick access. The range of weaponry is an assortment of swords, axes, maces, bows and staves varying in levels from ordinary, enchanted and epic items. Enchanted and epics provide bonuses to skills (and to traits when wielding the weapon).

LOTRO is primarily a quest-based game. These are initiated by speaking to NPCs and can be recognised by a floating gold ring (yes: that ring) above their heads. By right-clicking, you're given the quest details, history and rewards, if any. Coming in two varieties, solo (alone) or fellowship (which is a quest that needs to be completed by a group of people working together). These are restricted to a maximum of six and can take anywhere from a few minutes to a few hours to complete.

During combat in a fellowship, an event called a conjunction can be triggered. When this occurs, four coloured buttons appear on the screen: one red, blue, green and yellow. Each member of the fellowship then chooses a colour, and, depending upon the combinations chosen, the result is either a devastating attack, damage dealt over time, healing bonuses or a combination of all of them. If a party of six choose five red and one blue, an attack called "Hew the Stone" is unleashed, which deals massive damage and a spirit is summoned to aid you in your next fight.

Unlike the stylised cartoon graphics in games like *World of Warcraft*, LOTRO has opted for a more realistic look to the characters and environments. The results they have

been able to achieve with short load times are unbelievable. We noticed some serious lag occasionally in the heavily populated towns such as Bree, but when questing, lag was no issue.

Game expansions will be released in the future with rumours circulating that the Mines of Moria will be the first addition.

A subscription-based game, LOTRO will cost (after initial client purchase) \$39.95 for one month of play. Unfortunately, no dedicated Southern Servers will be available, so for all Australian and New Zealand players, it looks as though we will be joining the US or European servers.

One MMO to rule them all is a bold statement to make, but this game *really* is that good. (PM Oorin when you log on; he'll be there.)



.. CONTACT Atari
.. ONLINE www.lotro.turbine.com
.. PRICE \$89.95 (subscribe \$39.95/m)

✓ It's Lord of the Rings.

✗ No dedicated Aus/NZ server.

.. VERDICT ★★★★★

Crackdown

It's pretty, but it's pretty boring as well, says *Troy Coleman*.

It seemed that after Lemmings and the Grand Theft Auto (GTA) series, everything creator David Jones touched turned to awesome. Now, with his latest release, we get the feeling his touch-of-awesome has turned into a stink palm.

Gangs have taken over the futuristic Pacific City. Three controlling factions: the Latin-American Los Muertos, Eastern European Volk, and the Asian gang Shai-Gen. As a superhuman law enforcement agent/clone created and governed by "The Agency", it is your job to clean up the city.

Much the same as GTA's sandbox, or, non-linear environment, Crackdown let's you explore Pacific

City at your own leisure and deal some deadbeat damage whenever you feel like it.

Possessing superhuman skills, you can literally leap tall buildings with a single bound or stride man-on-the-moon style through the shopping district. Other skills include driving, firearms, explosives, and strength (you can toss cars off a building.) Completing relevant tasks can increase all skills: collecting green orbs hidden throughout the city increases your agility skill, which means you can jump further.

In-game graphics are unbelievable, as all next-gen console titles should be. Supporting up to 1080i, everything has a very finished,

very sharp look and feel. That said, it is nothing we haven't already seen in the Grand Theft Auto series.

Co-op mode is also available, so you can share the unrivalled mediocrity with an unsuspecting friend. It is kinda fun though to kick your partner in the back to make him fall off the tallest building, throw a burning car on him, build a giant pile of cars together and then blow it up with a rocket launcher. This fleeting fun comes to a grinding halt when you realise, "Oh, we're meant to be killin' dudes."

The unfortunate fact is that this game can be really fun when you're not following the actual storyline. Crackdown is GTA without the cool.



CONTACT Microsoft
ONLINE crackdownoncrime.com
PRICE \$99.95

PLATFORM XBOX 360

✓ Superhuman skills; sandbox game play.

✗ Sandbox gameplay.

VERDICT ★★★★★



"Unrivalled mediocrity, huh? Well... try unrivaling this mediocrity!"

Godhand

Joshua Pike meets a man with a Godhand.

Boot-scootin' and ball-kickin' his way through this neo-western landscape, protagonist Gene has lost his arm to axe-wielding punks. He is taken in and given the all powerful Godhand — a limb with the power to make demons run squealing back to the pits of hell.

Throughout his ordeal, he meets various no-good doers which he must overcome with only bare fists, leather-clad feet and the fury of his new Godhand. Along the way he also gambles in the casino, wages bets on racing chihuahuas and discovers black cherchers (as well as

CONTACT Capcom
ONLINE ww2.capcom.com/godhand
PRICE \$79.95

PLATFORM PS2

✓ Arse-smacking comedy.

✗ Hard — really hard.

VERDICT ★★★★★

using bikini-clad babe pickups to power up his Godhand, and the odd piece of fruit for health).

This story is unique because it's a one-person shooter, without the guns. It involves inventive and amusing methods of incapacitating various foes, such as a boot to the groin, or a smack to the arse, or stomping one's head into the dust. And I have to say, whilst confessing my titillation by it all, the sight of some villainous chick being continuously smacked on the arse by our hero was a site that would send this game into the 5/5 realm in a heartbeat. But as a whole game experience, there is more to be said.

The gameplay and fighting system are reminiscent of Devil May Cry or God of War; whilst one progresses through the game, new moves are awarded. The



ability to assign custom combos to certain buttons is useful when encountering various opponents. Some need fast hitting; others more powerful, through slower attacks. There are instructional tutorials which are useless, as by the time they're given, it's already been discovered what needs to be done. A useful feature is the fighting ring, where one can either practise new moves and techniques, or make money and try to overcome set groups of foes.

Whilst the game is undeniably fun, it must be stressed that it is extremely hard. It's also unfortunate that there is no two-player mode, as the comedy is something to be shared. While the unleashing of Godhand is cool (and makes one invulnerable for several seconds), the roulette wheel used is bulky and difficult to control: unfortunate, as the power it unleashes is integral to overcoming many of the bosses, making this game very challenging, even on the easy level setting.

and try again
Authorization for "R"-Rated Material

Rating changed since Burton functioned properly (software installations, OS upgrades, etc.)
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To be, OR not to be

Decisions, decisions. They're hard to make sometimes, which is where we come in. As professional geeks, we're here to help you out. The theory is, we review the products, we explode the tech, we sort the wheat from the chaff — all so you don't have to, so you know what the best gear is, so you can get on with your own thing. Well, that's the idea... It's just, sometimes, even us folk in the industry can't make up our minds. Take the example below from a prominent Australian tech mag's web site. Two adjacent links on their home page sell two very different stories: the first screams, "Wait! Don't buy Windows Vista!", just slightly contradicting its cheerier neighbour, "Windows Vista: 15 reasons to switch". Sheesh. Here at APC, we'd never send such mixed signals... Oh, right: <http://snipurl.com/1aur1> and <http://snipurl.com/1aur3>. Hey, we're just giving you both sides of the argument!



HOW TO CODE web PAGEZ

"How much hard drive space do I need? Can you explain the different movie ratings? What does it mean to 'back up' my videos?" These are all questions on Wal-Mart's US Video Download FAQ page — or at least, they would be if you could read them and click on the links. What you can see to the left is the result of trying to view the site in an "unsupported" browser like

Firefox. Either that, or, as suggested on www.boingboing.net, "It's an abstract post-digital conceptual art project *disguised* as a video download service... After a few deep bong hits, the rich layers of overlapping text probably make sense." Really quite the gaffe, considering Wal-Mart isn't exactly short of the dosh to code the site for multiple browsers (APC Workshops

covered browser support last month, page 110). But then again, the site is still in beta (and Wal-Mart's far from the only culprit). The shopping giant has now responded by shutting down site access completely to any browsers other than Internet Explorer (ie. one browser to rule them all etc.). Sigh. When will these corporate behemoths learn to embrace browser diversity?



The cyber-rat race

The Futurist, the magazine published by the World Future Society, recently announced its editors' top 10 future forecasts in the "2007 Outlook Report" (www.wfs.org/forecasts.htm). Amidst many other thought-provoking predictions — on topics ranging from environmental issues to the global economy and kids' "nature deficit disorder" — our eye was particularly caught by items six and seven...

6. We'll incorporate wireless technology into our thought processing by 2030. Apparently, over the next 25 years, we'll "learn how to augment our 100 trillion relatively slow

inter-neuronal connections with high-speed virtual connections via nanorobotics... to greatly boost our pattern-recognition abilities, memories and overall thinking capacity, as well as to directly interface with powerful forms of computer intelligence and with each other." But that's not all!

7. The robotic workforce will change how bosses value employees. This one proclaims that "[as] robots and intelligent software increasingly emulate the knowledge work that humans can do, businesses will 'hire' whatever type of mind that can do the work — robotic or human. Future human workers may collaborate

with robotic minds on projects for a variety of enterprises..." So, what's the upshot of all this? Well, it kind of looks to us like workers had better keep on their toes (and keep an eye on their bosses and co-workers, too). From now on, it just might not be enough anymore to be simply faster, stronger and better than the guy in the cubicle next to yours. In fact, you may want to consider bundling a wireless upgrade to your own brain when going for that promotion (just to stay in the game). After all, you don't want that Johnson droid down the corridor getting ahead, do you? **BTTC**

chip chat



by Peter Dockrill



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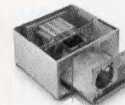
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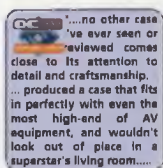
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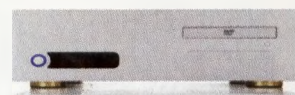
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FAX SWITCH will allow your existing Fax Device to connect to any Single Telephone line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Fax operation. Will operate with all existing telephones and also an Answering machine.



NEW INTELLIGENT MODEMSWITCH
MODEM SWITCH allows your existing Data Modem Device to connect to any Single Telephone Line, Fax Line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Dial In & Dial Out Modem Data operation. Models available that allow up to 8 devices on 1 line.



NEW EFTPOS SWITCH
EFTPOS switch will allow your existing EFTPOS device to share any existing Single Telephone Line, Fax Line or a Multi Line (PABX) phone system. Provides automatic connection on dialling BARGE-IN protection prevents interference when line is in use. Alternative model will allow operation on 2 lines.



MISCELLANEOUS TELEPHONE LINE APPLICATIONS

NEW VOIP SELECTOR
This device will allow you to connect one or more telephones to your TELEPHONE LINE and VOIP LINE. Incoming calls from either line ring on the connected telephone(s). Outgoing calls are automatically DEFAULTED to ONE LINE, but the alternative line can be selected by DTMF code.



UPDATED TWO LINE SELECTOR
Premium device will allow you to connect one Telephone Device to two Telephone lines (Telstra, Optus, VOIP, PABX etc). Ideal for EFTPOS, Cordless Phones, Modems etc. Additional features are provided, including automatic (or manual) selection of an alternative line if the default line is busy.



TELEPHONE CALL TRANSFER
Easy-Transfer will allow you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Uses your existing telephones.



MULTIPLE NUMBER SWITCH
Operate Two numbers on one line. This device will connect your Multiple number calls to one set of phones or answering machine and your Normal number calls to another set of phones or answering machine.



TELEPHONE LINE ON HOLD SOLUTIONS

UPDATED DIGITAL ON HOLD
DMS, Australia's Leading On Hold player, is an MP3 based Message On Hold Device, designed to provide the High Quality and High Reliability that is necessary for all telephone On Hold applications. Easy message change provided by replacing memory card.



NEW ELECTRONIC MESSAGE UPDATE
DMC is available with range of optional Automatic electronic message update methods including Email, Modem, FTP and Network IP. We have a National Network of Dealers ready to produce your customized message.



SINGLE LINE ON HOLD
Just plug our MOH Line Sharer into any socket on your single telephone line, connect any audio source (Radio, PC or DMC) and you now have a professional telephone line On Hold facility for your existing telephones.



NEW AUTOMATIC CALL ATTENDANT
Our single line CALL ATTENDANT will answer your incoming calls after 4, 6 or 8 rings, play a greeting & then put your call on hold until you are able to answer. Also provides Message on Hold facility for your single line.



MISCELLANEOUS TELEPHONE LINE APPLICATIONS

TELEPHONE LINE SIMULATOR
This TELEPHONE LINE SIMULATOR can be used for testing, programming & demonstration of analogue telecommunications equipment, without the need to use a telephone line and generating costly calls. 4 Models are available.



NEW RING INDICATOR
This device detects incoming calls and will close/open a relay to match the cadence of the incoming ring. Can also be set to close a relay until a call is answered. Ideal for control of external horns or lights to advise of an incoming telephone call.



REMOTE TELEPHONE ACTIVATOR
Call in to Switch ON, Switch OFF or RESET your PC, SERVER or any electrical equipment by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU accessory. 3 models are available.



POWER CONTROL UNIT
PCU connects direct to the RTA and also to your power socket to allow telephone line dial in switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.



DIGITAL AUDIO EQUIPMENT

NEW MESSAGE ON DEMAND
TDS can be programmed with up to 256 MP3 based messages stored on an MMC/SD card, which can be recalled and played by keypad entry or time programmed sequences.



TALKING DISPLAY UNIT
TDU will play 1 or more pre-recorded messages as soon it is triggered by a movement sensor, a switch, or at a preset time interval. Ideal for Product Promotions, Product Information, Message Warnings etc.



MULTIPLE INPUT UNIT
MIU will allow for up to 12 separate movement sensors or switches to be connected to the TDU. Each sensor triggers its own unique message, output via an 8 ohm unpowered, powered or amplified speaker.



AUDIO SWITCHING UNIT
ASU will allow the TDU to be connected to any existing PA or Background Music system. The existing PA or Background Music system is then muted or faded whenever a TDU message is broadcast and then reconnected when finished.



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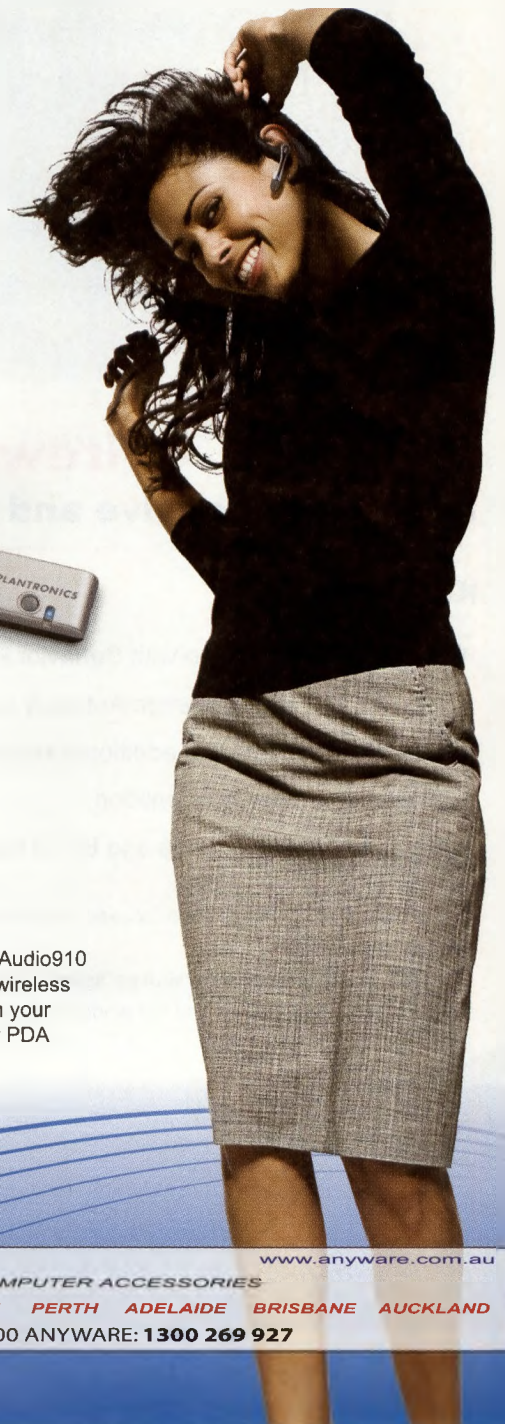
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December 2006

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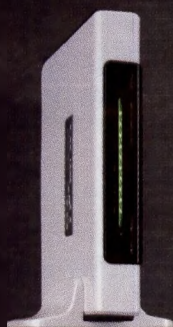
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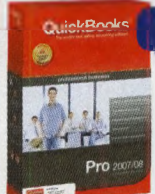
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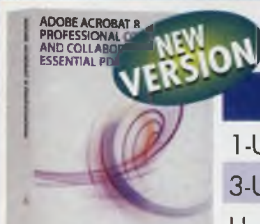
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3-User (per user)	\$365	\$565
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NORTON 2007



	Norton SystemWorks Premier 2007/v10	Norton AntiVirus 2007
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3-User Pack	N/A	\$85
5-User Pack	\$220	\$117
10-User Pack	\$359	\$200



Microsoft Office 2007

	Upgrade	New Install
Standard	\$370	\$495*
Small Business	\$435	\$560*
Professional	\$475	\$600*
Home & Student (3-user)		\$215
Professional Acad/Home		\$247



Adobe Elements

	New Install	Academic
Adobe Photoshop Elements Version 5	\$135	\$105
Adobe Premiere Elements Version 3	\$135	\$105
Adobe Photoshop Elements Version 5 AND Premiere Elements Version 3 BUNDLE	\$210	\$159

SPECIALS



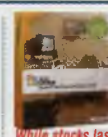
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Expression Web - New Install[†]

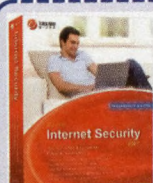
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- Publisher 2003 Upgrade **\$135**
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- Reference Manager V11 **\$495**
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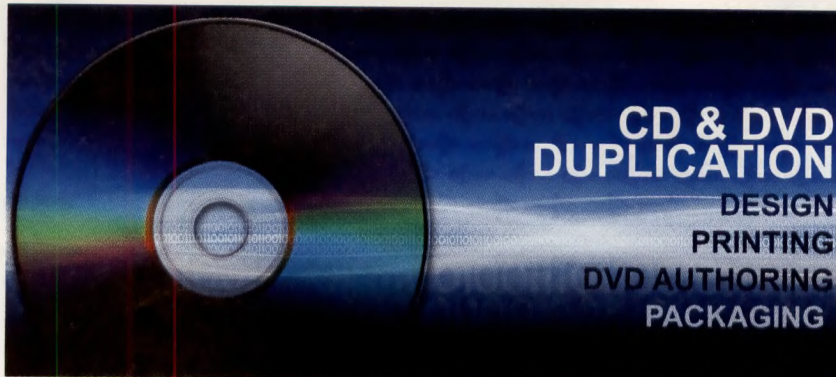


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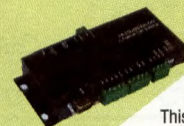
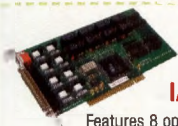
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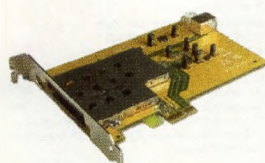
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Suitable for cars, boats, or space critical situations. With XP Pro.
Cat 1168-1 \$1699



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Use your new notebook ExpressCards in a standard PC. Requires a PCIe 1x slot.
Cat 2457-1 \$109

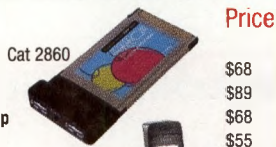


Macro Keypad

This 20 key keypad allows the user to store multiple keystrokes or complex commands under one key.
Cat 8904-1 \$299

What's New?

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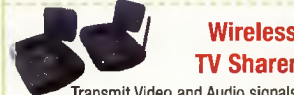
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80 GB Hard Disk Drive
DVD Burner
17" LCD Monitor 8Ms (Silver)
450 Watt ATX Mid Big Case(Black)
Gigabyte All in One Main Board,
Onboard Graphics On Board Stereo Sound System,
Keyboard/Optical Mouse,MS Windows XP Home Edition
(Optional for Modem)

From;
***\$819**

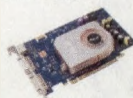


LG 17" LCD L1719S Silver Monitor 8ms



From
***\$254**

Asus EN7600GT 256M PCI-E
Video Card



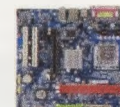
From
***\$188**

LOGITECH DELUXE 250
DESKTOP



From
***\$20**

Gigabyte GA-VM900M s775
Motherboard



From
***\$85**

*All price's are subject to change, Please check our website for updated pricing!!

Price from 16/03/2007

Australia's Best Value Hosting Provider

Free Domain Name

with every new package

Clustered Hosting

- Load Balanced Cluster
- Plesk Reloaded
- 250Mb Web Space
- 8Gb Monthly Transfer
- 25 POP3 Accounts

from **\$25** per month

Web Hosting

- Linux / Windows
- 250Mb Web Space
- 4Gb Monthly Transfer
- 20 POP3 Accounts
- Daily Backups

from **\$125** per year

Dedicated Servers

- Brisbane Datacenters
- 99.9% Network SLA
- Multiple High Speed Links with IX Peering
- Dell Rackmount Servers
- Upto 400Gb Traffic

from **\$179** per month



Hosting Shop
Making the Net Work

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harristechnology



1 - 30 April 2007

NEW TECHNOLOGY

EXCLUSIVE

WINDOWS VISTA BUSINESS

lenovo
J110
\$1199

S9367
See page 07



\$149 CASHBACK

BONUS CARRY BAG

NEW WITH WINDOWS VISTA



acer
TM2484WXM
\$849

U6026
See page 04

**BEFORE CASHBACK
YOU PAY \$998**

8GB flashIT2 USB Drive

\$199 | U5794

See page 10

MASSIVE 8GB CAPACITY



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for every \$2000 or more spent on RentSmart**

See page 3 for details

Call 1300 13 9999 | Click ht.com.au | Visit our stores

3 WAYS TO SHOP **CALL CLICK VISIT**

04 | Notebooks

06 | Desktop & Display

08 | PDAs & Smartphones

09 | Networking & Servers

10 | Storage

12 | Printers

14 | Software

DID YOU KNOW

We've made it even easier to make your technology purchases at ht.com.au - by introducing an advanced new search system.

Click and try it out today.

NEW STORE OPENS IN WA THIS MONTH!

Harris Technology's newest Business Centre opens its doors this month in the new location of Cannington, WA. The ninth store in the national chain for Harris Technology, Cannington expands our operations on the West Coast and provides Perth customers with an alternative location to the existing store in Osborne Park.

The new store design is based on the recently re-furnished stores at North Ryde in NSW and Osborne Park, offering a modern interior with a clean fresh design that assists our customers to find the right technology solution for their Home or Business needs.

Cannington will stock the same extensive range of leading brands as well as providing our customers with the opportunity to see the latest technology in action through live demonstrations - including Print Live, an exclusive printing demonstration concept exclusive to Harris Technology stores.

Harris Technology can help you realise the true potential of your business through understanding which solutions will best help drive productivity and return on investment, as well as helping you make the most of your technology needs at home.

Harris Technology's Cannington store opens on Saturday April 14. Come and see us at **1359 Albany Highway, Cannington WA** for opening week discounts, special offers, plus details of a major prize giveaway that must be won during opening week!

We look forward to seeing you in-store!

The Harris Technology Team



Save up to 10% when you purchase any memory card



SAVE 10%

ONLINE ONLY

Save up to 10% when you purchase any Logitech keyboards or mice



SAVE 10%

ONLINE ONLY

Save up to 10% when you purchase any Samsung printer



SAVE 10%

ONLINE ONLY

Online Only Offers available online only between 01/04/07 and 30/04/07. Delivery charges may apply. Not available in conjunction with any other offer. Not available in Business Centres or via phone. No further discounts available. Only while stocks last. Limited supply per customer [except SA]. Offer subject to Harris Technology's Returns Policy and Terms & Conditions of purchase.

What's new @ ht....

TOSHIBA

A120 Notebook



\$1539

U5666 | RENT \$17.26/wk*

VERSATILE MOBILE SOLUTION



Norton 360

\$25 CASHBACK OFFER

ALL IN ONE SOLUTION



\$129 | U6150

SAMSUNG

226BW 22"
Widescreen Monitor

OPTIMISED FOR WINDOWS VISTA

\$749

U5893 | RENT \$ 6.58/wk*



SONY

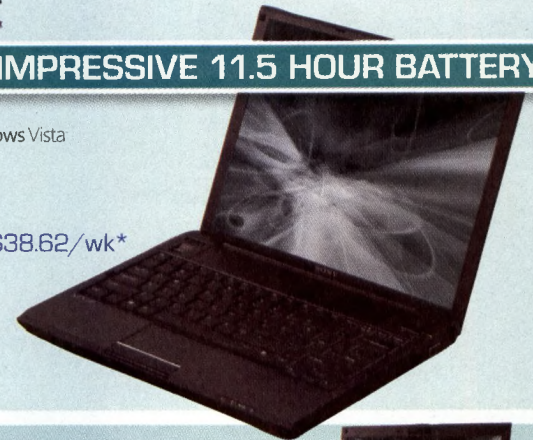
G118GNB

IMPRESSIVE 11.5 HOUR BATTERY



\$3699

U5375 | RENT \$38.62/wk*



My Book Essentials 250GB
External Hard Drive

HOT PRICE

\$179 | U5597

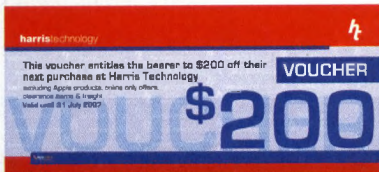
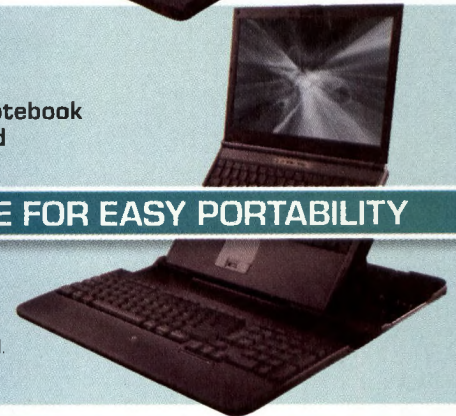


Alto - Portable Notebook
Stand & Keyboard

FOLDABLE FOR EASY PORTABILITY

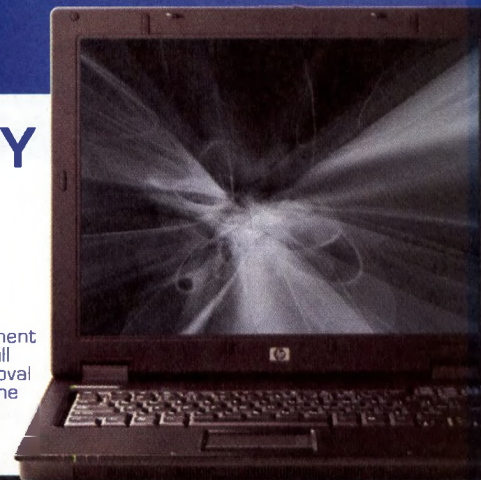
\$178 | U4195

Computer not included.
Image for illustration
purposes only.



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MORE SPENT ON RENTSMART**

Terms and Conditions: This offer is available to approved customers who RentSmart \$2000 or more of equipment at Harris Technology. Approved customers will receive a \$200 Harris Technology gift voucher. Gift vouchers will be mailed to qualifying customers at the end of the promotional period. Please allow 21 days for delivery. Approval conditions apply. Offer is not available on 24-month terms. Offer available from 10.04.07 - 30.04.07. Limit of one offer item per qualifying customer. Not to be used in conjunction with any other RentSmart offer. While stocks last. RentSmart is a rental facility operated by RentSmart Pty Ltd. and is available to approved customers on selected products with a total retail value over \$550. ABN 62 233 046 288.



Improve your productivity with these new releases

April 07

Notebooks

Mobile Office Solutions...

acer

TravelMate 2484WXM

NEW

BONUS BAG

\$149 CASHBACK¹

- Intel Celeron M 440 1.8GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- 14.1" WXGA Widescreen
- Wireless LAN 802.11b/g
- Weighs 2.4kg
- Windows Vista Home Basic
- 1 year warranty

\$849 BEFORE CASH BACK
YOU PAY \$998

U6026 | RENT \$11.55/wk*

DID YOU KNOW

ht.com.au now understands misspelt search terms and will attempt to correct any mistakes through the new Did you mean? feature.

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* Available capacity of hard drive may be less due to preinstalled software

[^] Engin bonus via redemption only from engin.ht.com.au. Terms & conditions may apply.

¹ Cashback via redemption from Acer. See acer.ht.com.au for terms & conditions

² Engin bonus via redemption only from engin.ht.com.au. Terms & conditions may apply.

³ Available from 1/4/07 to 30/4/07 or while stocks last. Not available in conjunction with any other offer. \$99 monitor is only available when purchased in conjunction with an eligible notebook.

Tecra A8

TOSHIBA

- Intel Core 2 Duo T5500 1.6GHz
- 256 + 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15.4" WXGA Widescreen
- Wireless LAN 802.11a/b/g
- Weighs 2.9kg
- Up to 3 hours battery life
- Windows Vista Business
- 1 year warranty

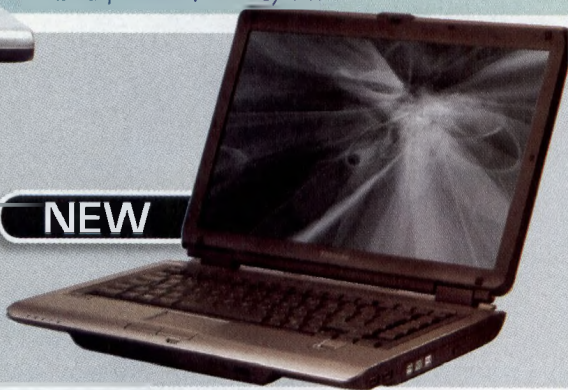


Windows Vista Business

\$1949

U4242 | RENT \$21.85/wk*

NEW



Tecra A6

TOSHIBA

- Intel Core 2 Duo T5500 1.6GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15.4" WXGA Widescreen
- Wireless LAN 802.11a/b/g
- Weighs 2.9kg
- Windows Vista Business
- 1 year warranty

\$1539

U5666 | RENT \$17.26/wk*



Windows Vista Business

VAIO SZ48GN

SONY.

Cutting edge technology

- Intel Core 2 Duo T7200 2GHz
- 1GB DDR2 RAM
- 160GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 13.3" WXGA Clear Bright LED Widescreen
- nVidia GeForce Go 7400 with 319MB Turbo Cache
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 1.9kg
- Motion Eye Camera
- Windows Vista Business
- 1 year warranty

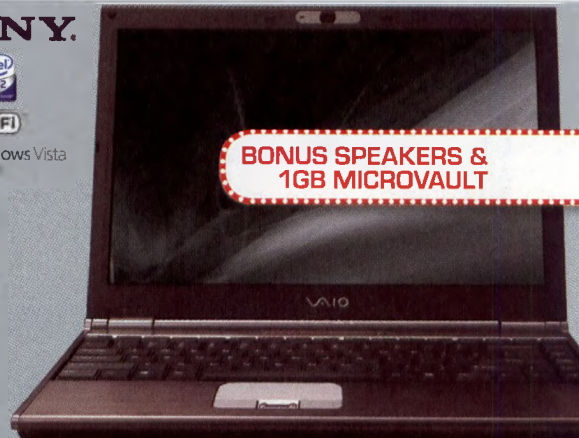
\$3699

U5422 | RENT \$38.62/wk*



Windows Vista

BONUS SPEAKERS &
1GB MICROVAULT



optional accessories

Microsoft Office Standard 2007
\$690 | U1825



Trend Micro PC-Cillin Internet Security 2007
\$99 | 3 User | U0389



optional accessories

Canon iP90 USB Portable
Bubblejet Printer
\$429 | R8579



HP Officejet 6310
Fax/Copier/Printer/Scanner
\$369 | T7517



nx6325

- AMD Turion 64 X2 TL-60 2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15" XGA Screen
- ATi Radeon Xpress 1150 with up to 128MB Shared
- Wireless LAN 802.11b/g
- Weighs 2.7kg
- Up to 3 hours battery life
- Windows Vista Business
- 1 year warranty

\$1699

U5537 | RENT \$19.05/wk*



BONUS \$99 INTERNET PHONE STARTER KIT WITH \$99 CALL CREDIT²

NEW & EXCLUSIVE

3000 N100

- Intel Core Duo T2060 1.6GHz
- 512MB DDR2 RAM
- 80GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- 15.4" WXGA Widescreen
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.8kg
- Up to 3 hours battery life
- Windows Vista Business
- 1 year warranty

\$1399

U5349 | RENT \$15.69/wk*

lenovo



VERSATILE SOLUTION

3000 N100

- Intel Core 2 Duo T5600 1.8GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15.4" WXGA Widescreen
- nVidia GeForce Go 7300 with 128MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.8kgs
- Integrated Fingerprint Reader
- Up to 3.5 hours battery life
- Windows Vista Business
- 1 year warranty

\$1899

U5351 | RENT \$21.29/wk*

lenovo



\$100 PRICE DROP

BONUS \$99 19" LCD MONITOR³



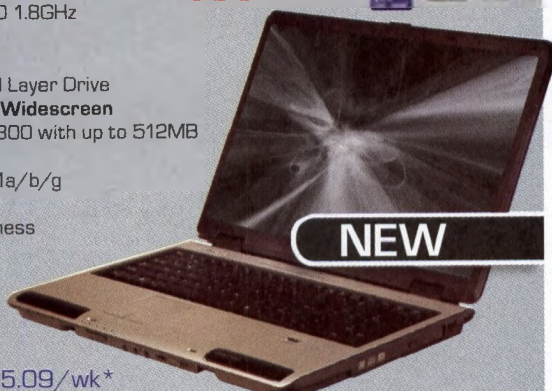
Satellite Pro P100

- Intel Core Duo T2400 1.8GHz
- 1GB DDR2 RAM
- 200GB* Hard Drive
- DVD SuperMulti Dual Layer Drive
- 17" WSXGA+ Gloss Widescreen
- nVidia GeForce Go 7300 with up to 512MB TurboCache
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Windows Vista Business

\$3299

U5667 | RENT \$35.09/wk*

TOSHIBA



NEW

nx8420

Ultimate power with dedicated graphics

- Intel Core 2 Duo T7200 2GHz
- 1GB DDR2 RAM
- 120GB* Hard Drive
- DVD SuperMulti ±Dual Layer Drive
- 15.4" WXGA Widescreen
- ATi Mobility Radeon X1600 with 256MB
- Wireless LAN 802.11a/b/g
- Bluetooth v2.0
- Weighs 2.7kg
- Up to 4 hours battery life
- Windows Vista Business
- 1 year warranty

\$2299

U4577 | RENT \$24.93/wk*



NEW

BONUS \$99 INTERNET PHONE STARTER KIT WITH \$99 CALL CREDIT²

optional accessories

hp iPAQ rw6828 Mobile Messenger Smartphone
\$849 | T7344



O2 XDA Atom Exec Smartphone
\$899 | T8955

optional accessories

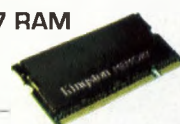
Samsung 940BW 19" Widescreen LCD Monitor
\$369 | U2943



Samsung 206BW 20" Widescreen LCD Monitor
\$479 | U5892

optional accessories

Kingston 1GB DDR2-667 RAM for HP Notebooks
\$229 | T7407



Kingston 1GB DDR2-667 RAM for Toshiba Notebooks
\$239 | U5144



Desktop & Display

Great value desktop and display deals

AT3220B LCD TV

- AT3220B: 32" (80cm)
- Resolution: 1366 x 768
- Brightness: 500 nits
- Contrast ratio: 1200:1
- Response Time: 8ms
- Weight: 17.7kg
- HDMI Input
- HD TV ready

acer



HOT PRICE

\$1199

A7460 | RENT \$13.87/wk

LA40S71BX LCD TV

SAMSUNG

- LA40S71BX: 40" (101cm)
- Resolution: 1366 x 768
- Brightness: 500 nits
- Contrast ratio: 3000:1
- Response Time: 8ms
- Weight: 24kg
- HDMI and PC connectivity
- HD TV ready



\$2299

U3877 | RENT \$24.93/wk

¹Purchase any advertised Toshiba projector until 30/04/07 and receive cashback of \$120 via redemption directly from Toshiba. Visit toshiba.ht.com.au for redemption form and full terms and conditions.

TOSHIBA

\$120 CASHBACK¹

ULTIMATE PORTABILITY ONLY 1KG



P8 DLP Projector

- DLP technology
- XGA resolution
- 1500 ANSI Lumens
- 2100:1 contrast ratio
- Compact 1.0kg
- Perfect combination: extremely mobile and bright
- Includes soft carry case and remote
- 3 year warranty

\$2499

T3878 | RENT \$27.10/wk*

TLP-X2000 XGA LCD Projector

- LCD technology
- XGA resolution
- 2000 ANSI Lumens
- 400:1 contrast ratio
- Compact 2.8kg
- Quick start & shutdown function
- Password security & control panel lock
- Includes remote with laser pointer

\$1879

T8677 | RENT \$21.07 /wk*

TOSHIBA

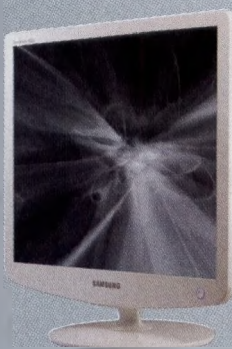


\$120 CASHBACK¹

932B LCD Monitor

SAMSUNG

- Viewable Image Size: 19"
- Interface: Analogue/Digital
- Resolution: 1280 x 1024
- Response Time: 5ms
- Contrast Ratio: 700:1
- 3 year on site exchange and zero dead pixel policy



\$369

U5079 | WHITE

226BW LCD Monitor

SAMSUNG

- Viewable Image Size: 22"
- Interface: Analogue/Digital
- Resolution: 1680x1050
- Response Time: 2ms
- Contrast Ratio: 3000:1
- 3 year on site exchange and zero dead pixel policy
- Vista Certified



\$749

U5893 | RENT \$8.66/wk

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Because buying isn't

optional accessories

Belkin Flip (USB KVM with Audio)
\$99 | T7209



optional accessories

Targus Ultra Max Cable
Combination Lock
\$69 | T3554



J110 Microtower

- Processor: Intel Core 2 Duo E6300 Dual Core
- Memory: 1GB (2 x 512MB) PC4200 DDR2
- Hard Drive: 250GB SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Operating System: Microsoft Windows Vista Business
- Warranty: 1 year parts & labour

\$1199

S9367 | RENT \$13.87/wk*



lenovo

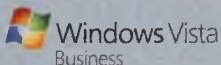


HT EXCLUSIVE

J115 Microtower



- Processor: AMD Athlon 64 X2 3800+ Dual Core
- Memory: 1GB (2 x 512MB) DDR2
- Hard Drive: 250GB SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Operating System: Microsoft Windows Vista Business
- Warranty: 1 year parts and labour



\$999

S9366 | RENT \$11.56/wk*

lenovo

DX2250 Microtower



BONUS \$99 INTERNET PHONE STARTER KIT WITH \$99 CALL CREDIT^

- Processor: AMD Athlon X2 3800 Dual Core
- Memory: 1GB (2 x 512MB) DDR2
- Hard Drive: 160GB SATA (7200RPM)
- Optical Drive: 16x Dual Layer DVD+/-RW
- Operating System: Microsoft Windows Vista Business
- Warranty: 1 year limited onsite



\$1049

U5715 | RENT \$12.14/wk*

optional accessories

Belkin Home Series Surge Cube
+ \$40,000 Warranty
\$23 | N3355



optional accessories

Targus Rotating Monitor Stand
\$45 | U5420



optional accessories

LaCie 320GB External 3.5" Hard Drive
\$249 | U0063



Phones & Networking

Keep in touch...

Olympus FE-240

OLYMPUS

World's smallest and thinnest 5x optical zoom lens camera with a 38-190mm range

- 7.1 megapixel
- 5x optical zoom lens
- Slim stainless steel body
- 13 optimised scene modes
- Large 2.5" LCD screen

NEW



\$399 | U5436

DSS7960+1
Dual Line PhoneUniden
SOUNDS BETTER

- Distinctive caller ID indicators
- Digital duplex speakerphone on handset
- 2 line dual keypad cordless phone
- 5.8GHz digital spread spectrum technology phone system
- Multi (10) handset capable (2 handsets included)



BONUS Headset

\$269 | U4664

Uniden HS910 Headset | \$29.95 | U0574

¹Purchase any GPS Powered by Whereis from April 1st 2007 until May 31st 2007 and receive \$50 cashback via redemption from Sensis. Visit sensis.ht.com.au for further details.

²Purchase any Engin product and activate before 30/04/07 (except Voice Box Series 1 & 2) See engin.ht.com.au for further details

DID YOU KNOW

You can now quickly search for and order our entire range of more than 15,000 technology products online at ht.com.au.

Click and try it out today.

\$50 cash back offer
on GPS units¹

powered by
Whereis

GNS8350 GPS Navigation

Uniden

- High definition 3.5" LCD display
- Simple & easy to use touch control screen
- Easy to navigate maps
- Unique night mode for easy glare free view



\$50
cash back offer
on GPS units

Whereis

\$549 BEFORE CASHBACK
YOU PAY \$599

U0576 | RENT \$6.93/wk*

Voice Box Series 2

engin

1. Have you got broadband?
2. Want 10 cent phone calls Australia wide?
3. Want the option to use your existing phone number?
4. Have a home or office phone? If you are not with engin and have answered yes to all of the above you are simply wasting your money. Get engin NOW, Purchase the engin Voice Box 2 and have the option of keeping your existing number!

BONUS \$99 CALL CREDIT²

\$99 | S9649

Treo 680

palm

Bring wireless mobile productivity to your small business with the all-in-one Palm® Treo™ 680 smartphone. It delivers full phone functionality plus wireless email¹, web browsing¹, messaging², document editing and more. Give your company a productivity boost and realise a quick return on investment with the Treo 680 — the ideal device for your growing business.



\$799

U4259 | RENT \$9.24/wk*

One Regional

TomTom ONE combines ease of use, portability, touchscreen technology and an elegant, unmistakable new design. Drivers can enjoy the benefits of a TomTom ONE immediately, thanks to TomTom's award-winning plug and drive navigation software pre-installed on a memory card.



\$50
cash back offer
on GPS units

Whereis

\$599 BEFORE CASHBACK
YOU PAY \$649

U0979 | RENT \$7.51/wk*

121 Internet Phone

engin

Making phone calls over the internet has never been easier. With the engin internet phone you can make 10c national and local untimed calls, super cheap international calls and low cost calls to mobiles by simply plugging the engin internet phone into your broadband connection. You also have the option of using your existing phone number and with \$99 worth of free calls there has never been a better time to join engin.

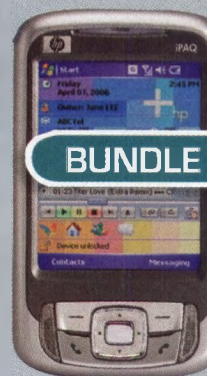
BONUS \$99 CALL CREDIT²

\$99 | T9895

Ipaq rw6828 Mobile Messenger bundle

hp

- Intel PXA272 416MHz
- 128MB ROM/64MB SDRAM
- 2.7" TFT LCD 1600 x 1200 Res
- 2 megapixels
- mini-SD
- Tri-Band GSM/GPRS/EDGE
- Also Includes a 1GB miniSD, additional 1530mAh standard battery, 1 additional stylus and 1 additional flip cover



BUNDLE

\$999

U5842 | RENT \$11.56/wk*

SBS Server Bundle Proliant ML110G4



- Dual-Core Intel Pentium D Processor 820 2.8GHz-800MHz-2x1MB L2 Cache
- 2 x 160GB Non Hot Plug SATA Hard Disk Drive
- 1GB PC2-530aO ECC (DDR2-667Mhz) Memory
- Embedded 4 Port SATA Controller with embedded RAID
- 48x CD_ROM
- Microsoft Windows Small Business Server Standard Edition R2



\$1695

U3865 | RENT \$19.01/wk*



DG834N RangeMax NEXT ADSL Modem/ Router

NETGEAR

- Complies with draft 802.11n, backwards compatible with 802.11b/g
- Interoperates at 270Mbps with other products powered with Intensi-fi
- Ensures optimal performance with internal antenna design



\$367 | T7509

TeraStation Pro II NAS 1TB Business Server Edition

BUFFALO

- Ultra-fast data transfer rates of up to 35 MB/s - more than twice the speed from TeraStation PRO
- Distributed file system support- allows multiple TeraStation to work seamlessly together as one unit



NEW

\$1799

U5985 | RENT \$20.17/wk*

8 port 10/100/1000 Managed Gigabit Switch

LINKSYS

- Supports 8 10/100/1000 ports with 2 shared mini-GBIC slots
- Included Access Control Lists (ACL) for granular security and GoSconfiguration
- Features a 16Gbps, non-blocking switch core



\$469 | T9823

DFL-210 NetDefendTM Security Firewall for SOHO

D-Link

- Integrated Firewall/VPN Appliance
- VPN Performance: 25Mbps (3DES/AES)
- 1 Ethernet WAN Port, 4 Ethernet LAN Ports, 1 Ethernet DMZ Port
- Firewall Throughput: 80Mbps



\$629

T8412 | RENT \$7.28/wk*

NP295 Wireless Homeplug Starter Kit

NetComm



Simply connect the NP285 to your broadband modem router to give you access to the internet and then use the NP290W in another location to increase your wireless coverage.

\$349 | U5476

GS724T 24 port Gigabit Smart Switch

NETGEAR



- Ideal for growing businesses who want the benefits of management without the cost and complexity of traditional managed switches
- 24 10/100/1000Mbps gigabit ports
- Non-blocking bandwidth
- Easy, browser-based switch management

\$799

N3147 | RENT \$9.24/wk*

DIR-655 Xtreme N™ Gigabit Router

D-Link

- Draft 802.11n speeds up to 14x faster than Wireless G
- Greater coverage for your entire home or office



NEW

\$379 | U5726

optional accessories

APC Back-UPS CS 650VA 230V
\$239 | Q7196

Belkin Home Series Battery Backup
400VA (UPS)
\$99 | T7156

optional accessories

Netgear WNR834B RangeMax
NEXT Wireless Router
\$255 | T7507

D-Link DGS-1008D 8-Port
10/100/1000 Un-Managed Switch
\$152 | K8853

optional accessories

D-Link DWA-547 RangeBooster N 650
Wireless LAN PCI Adapter
\$187 | T9470

D-Link DWA-645 RangeBooster N 650
Wireless LAN PCMCIA Card
\$187 | T9472

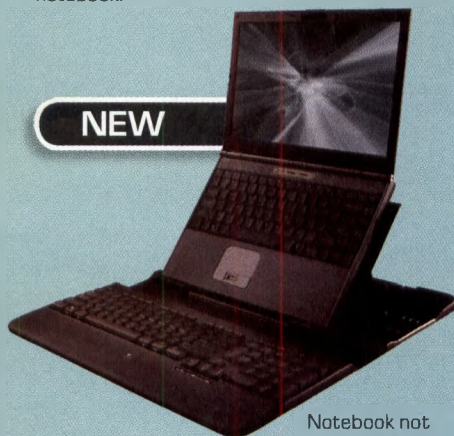
Desktop Peripherals

Peripherals to suit all your needs...

Alto Portable Notebook Stand & Keyboard



Looking for more comfort from your laptop? This adjustable stand places your notebook display at eye level while the full-sized keyboard lets you type faster and with less fatigue. Easy to set up and easy to store, it works with virtually any notebook.



NEW

\$178 | U4195

Notebook not included. For illustration purposes only.

DL Lightscribe External DVD Drive



- Features exclusive LightScribe for direct disc custom labeling
- Records to Double Layer DVD+R, DVD±R/RW and CD-R/RW
- Masters up to 8.5GB DVD-Videos from your desktop



\$149 | T3116

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Wireless Presenter 3000 **Microsoft**

- Presentation Timer and Vibration Alert
- Wireless 2.4GHz, control the presentation upto 30 feet away
- Built-in laser pointer
- 6+ Months of battery life
- **LIMITED STOCK**



HOT PRICE

\$49⁹⁵ | U5991

MX Revolution



- Logitech SmartShift™ Technology
- Revolutionary hyper-fast scroll wheel
- Rechargeable Li-Ion battery
- Precision laser tracking



SAVE \$20

\$159 | T9986

VX Revolution



- New, revolutionary, hyper-fast scroll wheel
- One-Touch search
- High-resolution zoom
- Performance laser
- Ergonomic design



SAVE \$10

\$99 | T9955

optional accessories

JNC 32MB Digital Notetaker
\$129 | U4957

SAVE \$20



JNC 128MB Digital Notetaker & MP3 Player
SAVE \$20
\$179 | U4744



8GB USB Flash Drive



- Hi-Speed USB 2.0
- Mac and PC compatible
- True Plug and Play no drivers needed
- Utility program for password security and partitioning functions

MASSIVE 8GB CAPACITY



\$199 | U5794

Cruzer Micro U3 4GB USB Drive



- U3 smart enabled
- Hi-Speed USB 2.0 certified (backwards compatible with all USB 1.1 ports)
- Retractable USB connector
- U3 functionality only supported on Windows 2000 (SP4 and later) & XP OS



HOT PRICE

\$94.95 | T8460

Micro Vault 1GB



- Stylish and Compact design
- Plug & Play
- PC-Mac Compatibility
- Virtual Expander
- Compact and Lightweight

HOT PRICE



\$39 | T9198

optional accessories

Sony ICDU60 Digital Notetaker with MP3 512MB
\$229 | U0811

SAVE \$20



Seagate Barracuda 320GB PATA Internal Hard Drive
\$165 | U0004



SAVE \$10

1TB Gigabit Ethernet Big Disk External Hard Drive



- Gigabit Ethernet & USB2.0 interface
- Expandable capacity through a USB host port
- Users & share level permissions
- Stream your photos, music and videos



NEW

\$829 | U5309

Also available:
500GB | \$499 | U4961

1TB OneTouch III External Hard Drive



- User-configurable RAID solution
- RAID 0 for high performance disk striping or RAID 1 for auto-mirroring
- Fast Data transfer - FireWire 400 and 800 and USB 2.0
- 7200RPM
- 16MB cache
- Maxtor Drivelock protection



\$799

T4613 | RENT \$9.24/wk*

My Book Pro 1TB Ext Hard Drive



- 1,000 GB of storage
- USB 2.0/Firewire 400/ Firewire 800
- Capacity gauge
- Raid
- EMC® Retrospect® Express Backup and System Recovery Software



\$749

U5601 | RENT \$8.66/wk*

My Book Essentials 500GB External Hard Drive



- High-speed USB 2.0 data transfer
- One time setup
- Password free access via PC authorisation
- Data is auto secured when plugged into an unauthorised computer



\$299 | T9002

Mini Hard Drive & Hub 250GB



HOT PRICE

- 4 USB-powered hub ports + 2 FireWire-powered hub ports
- Compact, sturdy metal casing
- Advanced heat dissipation
- Space-saving stacked configuration
- Increase storage capacity and connect multiple devices

\$269 | T6583

Passport 160GB Portable Hard Drive



- Hi-Speed USB 2.0
- 5400RPM - 2MB buffer
- Plug & play, inbuilt software loads directly from the drive
- Ultra-portable drive
- Powered by USB bus so no separate power supply needed



HOT PRICE

\$199 | U5600

Quickcam Pro 5000 Webcam



- 640 x 480 VGA video with superior quality glass lens for sharper images
- RightLight 2 Technology provides improved image clarity in any light



SAVE \$10

\$125 | T3585

Elite Bluetooth Desktop



- High performance Wireless Bluetooth desktop
- Features ultimate Keyboard & Mouse navigation with Tilt Wheel Technology
- Perfect with Media Center Edition PCs



HOT PRICE

\$199 | P7009

diNovo Bluetooth Desktop



- Bluetooth MediaPad — long range Bluetooth remote commander
- Combines a numeric pad, calculator & remote control
- LCD display and rechargeable MX Laser mouse



HOT PRICE

\$299 | T3582

optional accessories

Imation Disc Stakka C10
\$157 | M4871



SAVE \$20

Dvico FusionHDTV Dual Digital 4 TV Tuner
\$245 | U0080



SAVE \$30

optional accessories

Verbatim DVD +R Inkjet Print 50PK
\$29.98 | T4573



SAVE \$6

Verbatim DVD -R Inkjet Print 100PK
\$58.98 | T8952



SAVE \$5

optional accessories

Sandisk Micro SD 2GB
\$59.95 | U3749



HOT PRICE

Verbatim DVD+R DL Inkjet Print 20PK
\$76 | S8528



SAVE \$20

Printers

All your printing needs covered...

Scanjet 4050 Photo Scanner



- Scan Resolution: 4800 x 9600 dpi
- 96-bit colour
- Scan 16 slides, 30 negatives plus medium/large film format
- Instant on / 4 button front panel (Scan, Scan Film, Copy, Scan to Share)
- Hardware dust and scratch removal
- Warranty: 1 year



\$519 | U5806

Scanjet N6010 Document Sheetfeed Scanner



- Fast, unattended duplex document scanning at up to 18ppm (36 ipm)
- Optical scanning resolution: up to 600 dpi
- Bit depth: 48-bit
- Gray scale levels: 256
- *Scan input modes:
Front panel (6-button, 4-task)



HP WARRANTY BONUS³

\$1049

U5394 | RENT \$12.14/wk

¹Via redemption from Harris Technology on purchases of the Samsung CLP300N between 01/03/07 and 30/04/07. Visit samsung.ht.com.au for more details.

²Purchase Windows Vista (retail boxed version) or a Desktop/ Notebook PC preloaded with Microsoft Vista and one of a selected range of Hewlett Packard printers on the same invoice between March 5th 2007 and April 30 2007 and receive a \$100 cashback from Hewlett Packard. Visit hp.ht.com.au for more details.

³HP Warranty Bonus

FREE 2 Years Warranty Upgrade on selected HP Scanjet Scanners. HP gives you this SMART BUSINESS BONUS with the purchase of your eligible scanner before the end of May 2007. To claim your Bonus Warranty simply visit hp.ht.com.au for full terms and conditions.

⁴BONUS HP Warranty Upgrade

Purchase selected HP Printers and you'll receive extra time added to your warranty, no extra cost - up to 3 years warranty cover. Promotion available to 31 May 2007. To claim your Bonus Warranty simply visit hp.ht.com.au for full terms and conditions.

CLP-300N Colour Laser



- Print Speed: up to 16ppm Mono A4/4ppm colour
- Print Resolution: 2400 x 600 dpi
- Total Media Capacity: 150 sheets
- Memory: 64 MB
- Connection: USB, Ethernet
- Monthly Duty Cycle: 24200 pages
- Warranty: 1 year on site



\$50 Coles Myer Gift Card¹

\$499 | U0104

MFC-665CW



- Printer/Copier/Scanner/Fax
- Print Speed: up to 20ppm (mono) / up to 18ppm (colour)
- Scan Resolution: 600 x 2400 dpi
- Standard Media Capacity: 100 sheets

\$299 | U5346

Deskjet 460 CB Portable Printer



BONUS Wireless card

Purchase with Windows Vista and receive \$100 Cashback²

BONUS HP WARRANTY UPGRADE⁴

- Print Speed: up to 17ppm
- Print Resolution: 1200 dpi x 1200 dpi
- Total Media Capacity: 50 sheets
- Memory: 32MB
- Connection: USB
- Monthly duty cycle: 500 pages

\$499 | T3509

Colour LaserJet 2600N Printer



- Print Speed: up to 8ppm Mono/8ppm colour
- Print Resolution: 600 x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 16MB
- Connection: Hi-Speed USB, Ethernet, 10/100Base-TX
- Monthly Duty Cycle: 35000 pages
- Warranty: 1 year



Purchase with Windows Vista and receive \$100 Cashback¹

\$529 | S2505

Fax 2820 Laser Fax Machine



- Printer/Copier/Fax
- Print & Copy Speed: up to 15ppm
- Print Resolution: up to 1200 x 600 dpi
- Total Media Capacity: 250 sheets
- Memory: 8MB
- Fax Transmission speed: 14.4 Kbps
- Connection: USB
- Warranty: 1 year



\$349 | S1320

SCX 4521F



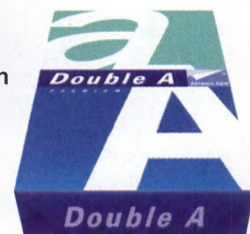
- Printer/Scanner/Copier/Fax
- Print & Copy Speed: up to 20ppm
- Print Resolution: up to 600 x 600 dpi
- Scan Resolution: 600 x 600 dpi
- Memory: 16MB
- Total Media Capacity: 250 sheets
- Connection: Hi-Speed USB, Parallel
- Warranty: 1 year



\$399 | T6638

optional accessories

**Double A A4
White 80gsm
500 page ream
\$6.49 | T4776**



HP Laserjet P3005

The HP LaserJet P3005 Printer series is the ideal solution for small and medium-sized offices. With its ease-of-use, low total cost of ownership and robust performance, this worry-free printer allows you to rest easy and concentrate on your business.

- Efficiency through faster print
- Productivity enhanced by connectivity
- Save time with fewer interruptions

\$1099

U4776 | RENT \$12.71/wk*

Also Available:

HP LaserJet P3005N | \$1429 | U5328 | RENT \$16.02/wk*

HP LaserJet P3005DN | \$1599 | U5330 | RENT \$17.93/wk*

HP LaserJet P3005D | \$1279 | U6038 | RENT \$14.80/wk*

HP LaserJet P3005X | \$2329 | U5331 | RENT \$25.26/wk*



BONUS HP WARRANTY UPGRADE⁴

ML-2571n

- Print Speed: up to 24ppm
- Print Resolution: 1200 x 1200 dpi
- Total Media Capacity: 250 sheets
- USB / Ethernet connection
- Monthly duty cycle: 20000 pages
- Warranty: 2 year on-site



SAMSUNG

\$329 | U0583

Laserjet P2015N Printer

- Print Speed: up to 26ppm A4
- Print Resolution: up to 1200 x 1200 dpi
- Total Media Capacity: 300 sheets
- Memory: 32MB (expandable 288MB)
- Connection: Hi-Speed USB, Ethernet (embedded print server)
- Monthly duty cycle: 15,000 pages per month
- Warranty: 1 year

\$699

U4728 | RENT \$8.09/wk*

Also available:

HP Laserjet P2015 | \$579 | U5652

HP Laserjet P2015DN | \$799 | U6036

HP Laserjet P2015X | \$929 | U5828



Laserjet 3055 All in One Printer

- Printer/copier/scanner/fax
- Print speed: up to 18ppm
- Print Resolution: up to 1200 x 1200 dpi
- Scan resolution: 600 dpi
- Hi-Speed USB, Ethernet
- Warranty: 1 year



Purchase with Windows Vista and receive \$100 Cashback²

\$749

T4390 | RENT \$8.66/wk*

Colour LaserJet 2840

- Printer/Copier/Scanner/ Fax
- 7-in-1 card reader
- Print speed: up to 19ppm mono/4ppm colour
- Print Resolution: up to 600 x 1200 dpi (mono)/up to 600 x 600 dpi (colour)
- Scan Resolution: 1200 x 1200 dpi
- Connection: Hi-Speed USB, Ethernet
- Warranty: 1 year onsite
- Windows and Mac compatible

\$1399

S1217 | RENT \$15.69/wk*



Purchase with Windows Vista and receive \$100 Cashback²

optional accessories

Ink or the MFC-665CW Printer



Ink	Part No.	Price
LC-57 BLACK	U1087	\$31
LC-57 CYAN	U1088	\$17
LC-57 MAGENTA	U1089	\$17
LC-57 YELLOW	U1090	\$17

Right on the Money!

Hurry, stocks are limited. Offer ends 30 April 2007.

Purchase

15 specially marked HP Toner Cartridges



Receive

\$350 or cash back



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HP Colour LaserJet 2600n valued at \$529

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The latest in software products...

Trend Micro Internet Security 2007



- Install on up to 3 PCs
- Advanced Spyware Protection
- Antivirus Security
- Free Updates and Telephone Support
- Home Network Control
- Parental and Content Controls


**BONUS USB DRINK
WARMER/COOLER¹**
\$99 | U0389

Pinnacle Studio 10 Plus Titanium



- High-quality HD video editing
- Digital Photo Pan-and-Zoom feature
- Output to DVD or popular mobile video device, and more
- Includes special anniversary pack containing hundreds of advanced effects and transitions


\$20 CASHBACK²
\$189 | T6025

¹ Purchases between 01/03/07 & 30/04/07 eligible for redemption from manacomm. See trendmicro.ht.com.au for more details.

² Purchases between 1/02/07 and 30/04/07 eligible for cashbacks from Pinnacle. See pinnacle.ht.com.au for more details.

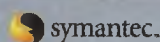
³ Purchases between 02/04/07 and 30/04/07 eligible for cashbacks from Symantec. See symantec.ht.com.au for more details.

⁴ Purchases between 1/04/07 and 30/04/07 eligible for bonus upgrade from Adobe. See adobe.ht.com.au for more details.

⁵ Purchases between 1/04/07 and 30/06/07 eligible for cashbacks from Nuance. See nuance.ht.com.au for more details.

⁶ Offer closes 30/04/07. Only available to customers that have up to 4 PCs or less in their business, does not extend to small business that have a server and require installation on a server. See specially marked boxes for full terms and conditions or visit www.smallbusinessoffers.com.au

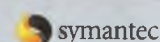
Norton 360



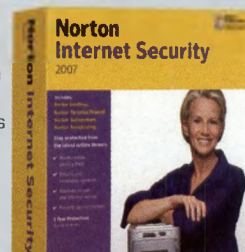
Norton 360™ delivers all-in-one security for everything the computer users in your family care about. Easy to use, it provides automatic and transparent protection from viruses and spyware, fraudulent Web sites, phishing scams, hackers, identity theft, and more.


\$129 | U6150

Norton Internet Security 2007



- Blocks online identity theft
- Detects and eliminates spyware
- Removes viruses and Internet worms
- Protects against hackers
- Automatically detects and blocks viruses, spyware, and worms


HOT PRICE
\$69 | U0335

Adobe Creative Suite Premium 2.3



Adobe Creative Suite 2.3 Premium software is a highly efficient, unified design environment that combines the latest versions of Adobe's professional design software.

BONUS Upgrade to Version 3⁴
\$1999

 WIN | U1241
MAC | U1240


AutoCAD LT 2008



Streamline your day-to-day tasks with AutoCAD LT® 2008 software. Daily work is simpler thanks to tools built with the drafter in mind. Work smarter and minimize workarounds as you refine your precision with annotation scaling and layer properties per viewport, text and table enhancements, and multiple leaders.


\$2200 | U5972

PDF Converter Professional 4.0



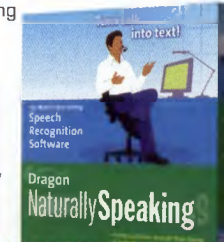
ScanSoft PDF Converter converts PDF files into documents, that look exactly like the original - complete with all the formatting and graphics!


\$30 CASHBACK⁵
\$159 | U0137

Dragon NaturallySpeaking Preferred Edition 9.0



Dragon NaturallySpeaking Preferred 9 gives small business users and PC enthusiasts the power to create documents, reports, e-mails and more - all by speaking! Fast, easy and amazingly accurate, it's over three times faster than typing.


\$30 CASHBACK⁵
\$369 | T9230

optional accessories

Logitech R-20 2.1 Speakers
\$39 | S6517


optional accessories

**Sony ICDU60 Digital MP3
Notetaker 512MB**
\$249 | U0811




Microsoft Office Small Business 2007



Microsoft Office Small Business 2007 is the complete, powerful and easy-to-use productivity and contact management suite. It offers new tools to help employees at small businesses work more efficiently and effectively so they can deliver better customer service.

\$499 | UPGRADE | U1828 **\$749** | FULL | U1827

BONUS OFFER

Valued at \$229⁶

When you purchase
Office 2007 Small Business Edition
(either upgrade or full)
or **Office 2007 Professional Edition**
(either upgrade or full)

YOU WILL RECEIVE

1 hour onsite installation
from Quickknowledge +

2 Months complimentary
Online Training on
Microsoft Office
supplied by Quickknowledge

Microsoft Office Professional 2007

Microsoft Office Professional 2007 is a complete, easy-to-use suite of productivity and information management software to help business professionals save time and stay organised. Powerful features centralise customer, sales and project information in one place so users can respond more quickly to opportunities. Includes all the features of Office Small Business Edition, as well as Microsoft Office Access 2007.



\$549 | UPGRADE | U1831 **\$849** | FULL | U1830

HURRY MICROSOFT OFFERS END 30.04.07

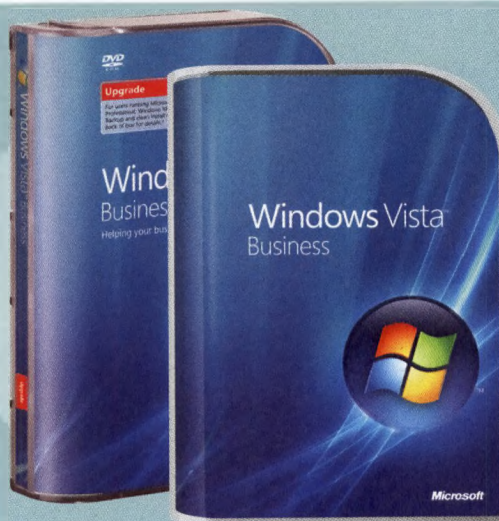
BONUS OFFER

Valued at \$139⁶

When you purchase
Vista Business Edition
(either upgrade or full)

YOU WILL RECEIVE

Transcend 1GB USB Drive with
Ready Boost +
2 Months complimentary
Online Training on Windows
Vista Business supplied by
Quickknowledge



Windows Vista Business DVD

Windows Vista Business offers powerful new ways to organise, find, and share information while staying better connected whether you are in the office or on the road. For small businesses, Windows Vista Business will help keep PCs running smoothly and more securely, so you will be less reliant on dedicated IT support.

\$379 | UPGRADE | U4504
\$565 | FULL | U4503

MYOB RetailManager 9



- An advanced point of sale solution that streamlines your store operations.
- Process sales fast, including lay-bys and accounts
- Manage your inventory

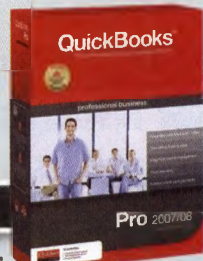


\$1729 | T7330

QuickBooks Pro 2007/08



- Time billing & job costing
- Integration with Microsoft® Office
- Integrated payroll management
- Track inventory



\$849 FULL | U5974

QuickBooks Plus 2007/08



- Integrated payroll management
- Track inventory
- Process credit card payments
- Keep track of your business with over 100 reports and graphs



\$579 | U5977

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April 07

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1 - 30 April 2007

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POWERFUL 2GHz DUAL CORE



invent

dx2250
Microtower
\$1049

U5715

See page 07



invent

nx6325
\$1699

U5537

See page 05

**BONUS \$99 INTERNET PHONE
STARTER KIT WITH \$99 CALL CREDIT**



LACIE

1TB Gigabit
Ethernet
External Drive
\$829

U5309

RENT \$9.59/wk*

See page 11

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1359 Albany Hwy, Cannington WA
14 April 2007

LOCATIONS | NSW - North Ryde 45 Epping Rd, **North Sydney** - G Floor Bayer Building 275 Alfred St, **Parramatta** 46 George St, **Alexandria** Unit 1/110 Botany Rd | **VIC - Hawthorn East** 612 Burwood Rd | **ACT - Fyshwick** 29-31 Townsville St | **QLD - Fortitude Valley** 356 St Pauls Terrace | **WA - Osborne Park** 426 Scarborough Beach Rd, **Cannington** 1359 Albany Hwy

STORE TRADING HOURS | Monday - Friday | North Ryde & Hawthorn 8am - 7pm, All other stores 8am - 6pm
Saturday | 9am - 5pm **Sunday** | 10am - 5pm (WA closed)

All purchases subject to Terms and Conditions & Returns Policy. No further discounts available. Limited Stock. No dealers. Delivery charges additional. Please call 1300 13 9999 or see delivery.ht.com.au for details. Offer available from 01/04/07 until 30/04/07. Not available in conjunction with any other offer. *The RentSmart figures quoted are based on a per week basis over 3 years. Terms and conditions apply. For details see rentsmart.ht.com.au.

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* All warranty Goods are return to base warranty except manufacturer warranty

* All orders are subject to CPL's full terms and conditions of sale.

* Prices subject to change without notices. Please check with web site or The Age Green Guide Page 10

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	Box only 1 \$369	Box only 2 \$579	Box only 3 \$569	Box only 4 \$779	IntelCore2 \$1169	Server Box \$2029
CPU	Intel Celeron 2.8G	Pentium4 DualCore 2.8G 915	AMD AM2 DualCore 3600	Intel Core2 Duo E6300	Intel Core2 Duo E6300	Intel Xeon 5120 1.8G
Motherboard	Gigabyte all in 1 MB	Gigabyte 945PL-S3 MB	Asus M2V MB	Gigabyte 945P-S3 MB	Gigabyte 965P-DS3P MB	Intel S5000VSASATA Server MB
Memory	512MB PC4200 DDRII RAM	512MB PC4200 DDRII RAM	512MB PC4200 DDRII RAM	512MB PC5300 Kingston DDRII	1GB PC5300 Kingston DDRII	1GB Kingston 5300 ECC DDRII
Hard Drive	80GB WD 7200 HDD	160GB Seagate SATAII HD	160GB WD SATAII HD	250GB Seagate SATAII HD	250GB Seagate SATAII HD	2 x 320GB Seagate SATAII HD
Optical Drive	LG 52x CD-RW or 16x DVD	Liteon 18X Dual Layer DVD-RW	Liteon 18X Dual DVD-RW	Pioneer 18X Dual DVD-RW	Pioneer 18X Dual DVD-RW	Pioneer 18X Dual DVD-RW
Graphics	Integrated	128MB Gigabyte X550 PCI E	128MB Asus 7100GS PCI E	128MB Gigabyte X550 PCI E	256MB Gigabyte 7800GT PCI E	Integrated ATI ES1000
Sound	Integrated AC97	Integrated Realtek ALC883	Integrated Realtek ALC660	Integrated Realtek ALC883	Integrated Realtek ALC883	Integrated Dual Gigabit Lan
LAN	Integrated 10/100 Ethernet	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Integrated Gigabit Ethernet	Dual-Channel SATA Controller
Modem	56K V92 Internal	56K V92 Internal	56K V92 Internal	56K V92 Internal	Firewire onboard	1.44 Panasonic
Floppy	1.44 Panasonic	1.44 Panasonic	1.44 Panasonic	1.44 Panasonic	1.44 Panasonic	Intel SC5299DP 550W PFC
Case	USB in front case 400W PSU	USB in front case 400W PSU	USB in front case 400W PSU	USB in front case 400W PSU	Antec SonataII Super Quiet	

CPL Value Budget PC

CPU	AMD AM2 3500 \$739 AMD AM2 3800 \$759 DualCore 3800 \$789	Intel Celeron 2.8G \$699 Pentium4 3.0G(631) \$739 Pentium4 3.2G(641) \$759
Motherboard	Asus M2V-TVM Motherboard	Gigabyte 9VM900M Motherboard
Memory	512MB PC4200 DDRII RAM	512MB PC4200 DDRII RAM
Hard Drive	80GB WD 7200 HDD	80GB WD 7200 HDD
Optical Drive	Liteon 18X Dual Layer DVD-RW	Liteon 18X Dual Layer DVD-RW
Graphics	Integrated	Integrated
Sound	Integrated AC97 6 Channel	Integrated AC97 6 Channel
Floppy	1.44 Panasonic	1.44 Panasonic
Case	USB in front case 400W PSU	USB in front case 400W PSU
Monitor	17" Philips 170S7FB Black LCD	17" Philips 170S7FB Black LCD
Keyboard	Logitech Deluxe 250 Keyboard	Logitech Deluxe 250 Keyboard
Mouse	Logitech Optical Mouse	Logitech Optical Mouse
Speaker	Logitech R10 Speaker	Logitech R10 Speaker

CPL Entertainment PC

CPU	AMD AM2 3800 \$979 DualCore 4200 \$1059 DualCore 5000 \$1159	DualCore 2.8G(915) \$1009 DualCore 3.4G(945) \$1109 Intel Core2 Duo 6400 \$1209
Motherboard	Gigabyte M55 SLI-S4 Motherboard	Asus P5LD2 SE Motherboard
Memory	512MB PC5300 Kingston DDRII	512MB PC5300 Kingston DDRII RAM
Hard Drive	160GB WD SATAII HDD	160GB Seagate SATAII HDD
Optical Drive	LG 18X Dual DVD-RW	LG 18X Dual DVD-RW
Graphics	256MB Gigabyte 7300GS TD PCIE	256MB Asus 7300GS TD PCIE
Sound	Integrated 8 Channel	Integrated 8 Channel
Floppy	1.44 Panasonic	1.44 Panasonic
Case	Coolermaster Elite 331 Case	Coolermaster Elite 330 Case
Monitor	17" Benq FP71G+ LCD	17" Benq FP71G+ LCD
Keyboard	Logitech Internet 350 Keyboard	Logitech Internet 350 Keyboard
Mouse	Logitech Optical Mouse	Logitech Optical Mouse
Speaker	Creative 2500 Subwoofer	Logitech X230 Subwoofer

CPL Business Solution

CPU	AMD AM2 3800 \$849 DualCore 3800 \$879 DualCore 4200 \$939	Pentium4 3.0G(631) \$799 DualCore 3.4G(650) \$839 DualCore 3.0G(925) \$879
Motherboard	Asus M2N Motherboard	Gigabyte 8I945GZME-RH Motherboard
Memory	512MB PC5300 DDRII RAM	512MB PC5300 DDRII RAM
Hard Drive	80GB Seagate SATAII HDD	80GB Seagate SATAII HDD
Optical Drive	Liteon 18X Dual DVD-RW	Liteon 18X Dual DVD-RW
Graphics	128MB Asus 7100GS TD PCIE	128MB Gigabyte X550 TD PCIE
Sound	Integrated, Gigabit Lan	Integrated, Gigabit Lan
Floppy	1.44 Panasonic	1.44 Panasonic
Case	USB in front case 400W PSU	USB in front case 400W PSU
Monitor	17" LG 1719S LCD	17" LG 1719S LCD
Keyboard	Microsoft Basic Keyboard	Microsoft Basic Keyboard
Mouse	Microsoft Optical Mouse	Microsoft Optical Mouse

CPL Extreme Gaming PC

CPU	AM2 DualCore4200 \$1359 AM2 DualCore5200 \$1499	Intel Core2 Duo 6400 \$1499 Intel Core2 Duo 6600 \$1639
Motherboard	Gigabyte M57 SLI-S4 Motherboard	Asus P5B Motherboard
Memory	1024MB PC5300 Kingston DDRII	1024MB PC5300 Kingston DDRII
Hard Drive	250GB Seagate SATAII HDD	250GB Seagate SATAII HDD
Optical Drive	Pioneer 18X Dual Layer DVD-RW	Pioneer 18X Dual Layer DVD-RW
Graphics	256MB Gigabyte 7600GS TD PCI E	256MB Asus 7600GS TD PCI E
Sound	Integrated 8 Channel	Integrated 8 Channel
Floppy	1.44 Panasonic	1.44 Panasonic
Case	Coolermaster Centurion 532 Case	Coolermaster Centurion V Case
Monitor	17" Samsung 740N LCD	17" Samsung 740N LCD
Keyboard	Microsoft Multimedia Keyboard	Logitech Media Keyboard
Mouse	Microsoft Optical Mouse	Logitech Optical Mouse
Speaker	Logitech X530 5.1 Speaker	Logitech X530 5.1 Speaker

Student Budget PC \$579

CPU	Intel Celeron 2.8G
Motherboard	Gigabyte 8VM800PMD MB
Memory	512MB PC4200 DDRII RAM
Hard Drive	80GB WD 7200 HDD
Optical Drive	Liteon 18X Dual DVD-RW
Graphics	Integrated
Sound	Integrated AC97
LAN	Integrated 10/100
Modem	56K V92 Internal
Floppy	1.44 Panasonic
Case	USB in front case 400W PSU
Monitor	19" Viewsonic G90F CRT
Keyboard	Multimedia Keyboard
Mouse	Optical Mouse

Family Value PC \$699

CPU	Intel 3.0G 631
Motherboard	Gigabyte 8VM800PMD MB
Memory	512MB PC4200 DDRII RAM
Hard Drive	80GB Seagate SATAII HDD
Optical Drive	Liteon 18X Dual DVD-RW
Graphics	Integrated
Sound	Integrated 6 Channel
LAN	Integrated 10/100
Speaker	HP PW792AA Subwoofer
Floppy	1.44 Panasonic
Case	USB in front case 400W PSU
Monitor	17" Philips 170S7FB LCD
Keyboard	Multimedia Keyboard
Mouse	Optical Mouse

DualCore Performance \$769

CPU	Intel DualCore 2.8G D820
Motherboard	Gigabyte 8I945GZME-RH
Memory	512MB PC5300 DDRII RAM
Hard Drive	80GB Seagate SATAII HDD
Optical Drive	LG 18X Dual Layer DVD-RW
Graphics	Integrated Intel GMA950
Sound	Integrated 8 Channel
LAN	Integrated Gigabit
Speaker	HP PW792AA Subwoofer
Floppy	1.44 Panasonic
Case	USB in front case 400W PSU
Monitor	17" Viewsonic VA703B
Keyboard	Logitech Deluxe Keyboard
Mouse	Logitech Optical Mouse



- All system configurations can be altered. Check upgrade solution in weekly Green Guide
- We also build customised PC.
- All parts subject to stock availability.
- Product may vary from picture shown.
- System warranty: one year parts & two years labour return to base.



	ASUS	ASUS	ASUS	ASUS	ASUS
Model	A8JS-4S019C	A9RP-5A100A	F3JP-AP002C	F3JR-AP028C	G1-AK029G
CPU	Core2 Duo T7200 2.0G	Celeron M440 1.8G	Core2 Duo T5500 1.6G	Core2 Duo T7200 2.0G	Core2 Duo T7200 2.0G
MEMORY/Max.	2x512MB DDRII667 / 2G	512MB DDRII533 / 2GB	2x512MB DDRII667/ 2G	2x1GB DDRII667/ 2G	2x1GB DDRII667/ 2GB
VIDEO	512MB NVidia Go7700	ATI Radeon Xpress 200M	256MB Radeon X1700	128MB ATI X2300	512MB NVidia Go7700
HARD DRIVE	120GB SATA	60GB 4200rpm	80GB SATA 5400rpm	120GB SATA 5400rpm	120GB 5400rpm
OPTICAL DRIVE	DVD Super Multi Drive	DVD Super Multi Drive	DVD Super Multi Drive	DVD Super Multi Drive	DVD Super Multi Drive
DISPLAY	14" WXGA ColourShine	15" XGA	15.4" WXGA ColourShine	15.4" WXGA ColourShine	15" WSXGA
MODEM	0.3MP Digital Camera	56K Modem	Card Reader, Camera	Reader, 1.3MP Camera	Reader, 1.3MP Camera
NETWORKING	10/100/1000 Lan / Wireless 802.11g, Bluetooth	10/100 Lan / Wireless 802.11g	10/100/1000 Lan/ Wireless 802.11g, Bluetooth, 1394	10/100 Ethernet/ Wireless 802.11g, Bluetooth	10/100/1000 Lan/ Wireless 802.11g, Bluetooth
OPERATION SYSTEM	Vista Home Premium 32	Vista Home Basic	Vista Home Premium 32	Vista Home Premium 32	Vista Ultimate
WEIGHT	2.4KG	2.9KG	2.9KG	2.9KG	3.1KG (8-Cell)
DIMENSION(HXWXD)	34.8-37.3x335x245mm	35.2x354x284mm	40.5x365x269.5mm	40.5x365x269.5mm	37.4x324x284mm
PRICE	\$2399	\$999	\$1699	\$2299	\$2599

	ASUS	ASUS	ASUS	ASUS	ASUS
Model	R1F-K033E	S7F-2P008C	U1F-1P007E	V1JP-AS034E	W7J-3P103C
CPU	Core2 Duo T7200 2.0G	Core2 Duo T5500 1.6G	Core Duo U2400 1.06G	Core 2 Duo T5600 1.8G	Core2 Duo T7200 2.0G
MEMORY/Max.	2x512MB DDRII667/ 2G	2x512MB DDRII667/ 2G	512MB+1GB DDRII667	2x512MB DDRII667/ 2G	2x1GB DDRII533/ 1.5GB
VIDEO	128MB Intel® 945GM	128MB Intel® MA 950	Intel® 945GM VGA	512MB ATI X1700	128MB NVidia Go7400
HARD DRIVE	120GB SATA 5400rpm	120GB 5400rpm	80GB 4200rpm	120GB SATA 5400rpm	120G SATA 5400rpm
STORAGE	DVD Super Multi Drive	DVD Super-Multi Dual	DVD Super Multi Drive	DVD Super Multi Drive	DVD Super Multi Drive
DISPLAY	13.3" WXGA ColourShine	12" WXGA ColourShine	11.1" WXGA ColourShine	15.4" WXGA ColourShine	13.3" WXGA ColourShine
MODEM	Build in Card Reader	Build in Card Reader	Build in Card Reader	Card Reader, Camera	Build in Card Reader
NETWORKING	10/100/1000 Lan/ Wireless 802.11g, Bluetooth	10/100/1000 Lan/ Wireless 802.11g, Bluetooth	10/100 Lan/ Wireless 802.11g, Bluetooth	10/100/1000 Lan/ Wireless 802.11g, Bluetooth, 1394	10/100/1000 Lan/ Wireless 802.11g, Bluetooth, 1394
OPERATION SYSTEM	Vista Business	Vista Home Premium	Vista Business	Vista Business	Vista Home Premium 32
WEIGHT	2.0KG (3-cell)	1.4KG Only (6-cell)	1.0KG Only (3-cell)	2.7KG	1.95KG (6-cell)
DIMENSION(HXWXD)	35x317x232mm	23.9-28.3x303.9x223.8mm	17.9-29x275x190mm	25-35.7x363x263mm	29-36.9x315x226.5mm
PRICE	\$3199	\$2099	\$3199	\$2829	\$2349

	TOSHIBA	TOSHIBA	TOSHIBA	TOSHIBA	lenovo
Model	A120 073004	A120 0R903H	A8 054012	A8 0HU041	9456-DRM
CPU	Core Solo T1350 1.8G	Core Duo T2300 1.6G	Dual Core T2400 1.8G	Core 2 Duo T5600 1.8G	Dual Core T5500 1.6G
MEMORY	512MB DDRII533 / 4GB	512MB DDRII667 / 4GB	1GB DDRII533 / 4GB	1GB DDRII533 / 4GB	512MB DDRII667 / 2GB
VIDEO	ATI Radeon Xpress 200M	128MB Intel GMA 950	128MB Intel GMA 950	128MB Intel GMA 950	128MB Intel GMA950
HARD DRIVE	40GB 5400rpm	60GB SATA 5400rpm	80GB SATA 5400rpm	80GB SATA 5400rpm	80GB SATA 5400rpm
STORAGE	DVD/CD-RW Combo	DVD SuperMulti Dual	DVD SuperMulti Dual	DVD SuperMulti Dual	DVD Rewritable Drive
DISPLAY	15" WXGA	15" WXGA	15" WXGA	15" XGA	15" XGA
MODEM	56K Modem	56K Modem	56K Modem	56K Modem	56K Modem
NETWORKING	10/100 Ethernet/ Wireless 802.11b/g	10/100/1000 Ethernet/ Wireless 802.11b/g	Intel Gigabit Ethernet/ Wireless 802.11g	10/100/1000 Ethernet/ Wireless 802.11b/g	Gigabit Ethernet/ Wireless 802.11g, Bluetooth
OPERATION SYSTEM	Windows XP Home	Vista Home Basic	Windows XP Pro	Vista Business	Windows XP Pro
WEIGHT	2.9KG	2.9KG	2.9KG	2.9KG	2.88KG
DIMENSION(HXWXD)	29.8-36.9x368x268mm	29.8-36.9x368x268mm	29.8-36.9x368x268mm	29.8-36.9x368x268mm	40.2x332x269mm
PRICE	\$959	\$1099	\$1669	\$2029	\$1649

Notting Hill (Head Office)
7 Howleys Rd., Notting Hill
Tel: (03) 8542 8688
Fax: (03) 9562 8781

West Melbourne Branch
130 Dudley St., West Melbourne
Tel: (03) 9223 4288
Fax: (03) 9328 1899

ASUS A8V-VM

- Supports AMD Socket 939 Athlon 64FX/ Athlon 64 X2/Athlon 64
- VIA K8M800 + VT8251 Chipset
- Front Side Bus 1600 MT/s
- Dual-channel DDR400/333/266, Max. 4GB
- 4x SATA II (RAID0, RAID1, RAID0+1)
- Graphic, Sound, Lan onboard
- 8x USB 2.0 Ports



\$89

ASUS M2N

- Support: AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron CPU
- FSB Support: 2000/1600 MT/s
- Chipset: NVIDIA nForce 430 MCP
- Dual-channel DDRII 800/667/533, Max. 8GB
- 1 x PCI-E x 16, 2 x PCI-E x 1, 3 x PCI 2.2
- 4x SATA 3.0Gb/s
- RAID 0, 1, 0+1, 5
- Gigabit Lan



\$109

ASUS M2N-MX

- Support: AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron CPU
- FSB Support: 2000/1600 MT/s
- Chipset: NVIDIA nForce 430/GeForce 6100
- Dual-channel DDRII 800/667/533, Max. 4GB
- Graphics: Integrated GeForce 6100 GPU
- 4 x SATA 3Gb/s with RAID 0, 1, 0+1, 5



\$99

ASUS M2N-SLI Deluxe

- Support: AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron
- FSB Support: 2000/1600 MT/s
- Chipset: NVIDIA nForce 570 SLI™ MCP
- Dual-channel DDRII 800/667/533, Max. 8GB
- 2x PCI Express x16 Support NVIDIA SLI
- 6 x SATA 3.0Gb/s, RAID 0, 1, 0+1, 5
- 8 Channel HD Audio
- Gigabit Lan
- 1394 & 10 x USB2



\$209

ASUS M2N32-SLI Deluxe WIFI

- Support: AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron
- FSB Support: 2000/1600 MT/s
- Chipset: NVIDIA nForce 590 SLI™ MCP
- Dual-channel DDRII 800/667/533, Max. 8GB
- 2 x PCI-E x16, support NVIDIA SLI™
- Dual Gigabit LAN
- 1394 & 8xUSB2



\$299

ASUS M2N32-SLI Premium Vista

- Support: AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron
- FSB Support: 2000/1600 MT/s
- Chipset: NVIDIA nForce 590 SLI™ MCP
- Dual-channel DDRII 800/667/533, Max. 8GB
- 2 x PCI-E x16, support NVIDIA SLI™
- Dual Gigabit LAN
- 1394 & 8xUSB2



\$399

ASUS M2N4-SLI

- Support: AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron
- FSB Support: 2000/1600 MT/s
- Chipset: NVIDIA nForce 64 SLI™ MCP
- Dual-channel DDRII 800/667/533, Max. 8GB
- 2 x PCI-E x16, support NVIDIA SLI™
- Gigabit LAN
- 10xUSB2



\$139

ASUS M2NPV-VM

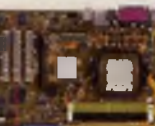
- Supports AMD Socket AM2 Athlon 64 X2 / Athlon 64 FX / Athlon 64 / Sempron
- Dual-channel DDR2 800/667/533
- PCI Express architecture
- Integrated GeForce6 GPU
- Dual VGA Output: DVI-D & RGB
- HDTV out interface
- 2 x 1394a Support
- Gigabit LAN
- SATA 3Gb/s, RAID 0, 1, 0+1, 5



\$119

ASUS M2V

- Supports AMD Socket AM2 Athlon 64 X2/Athlon 64 FX/Athlon 64/Sempron
- FSB Support: 2000/1600 MT/s
- Chipset: K8T890
- DDR2 800/667/533, Max. 8GB
- 1x PCI Express x16 slot
- 6 Channel HD Audio
- Gigabit Lan
- 8 USB2 Ports



\$99

ASUS M2V-TVM

- Supports Socket AM2 for AMD Athlon™ 64 X2/ Athlon™ 64/ Sempron™
- FSB Support: 2000/1600 MT/s
- Chipset: VIA® K8M890
- DDR 667/533, 2 Slots, Max. 2GB
- Integrated VIA DeltaChrome GPU, Max. 256MB Shared
- 1x PCI Express x16
- 6 Channel HD Audio
- 10/100 Lan
- 8 USB2 Ports



\$79

ASUS Commando

- Intel® Quad-Core CPU ready
- Intel® Core2 Extreme/ Core2 Duo Ready
- Intel P965 chipsets
- Dual-channel DDR2 800/667/533, Max. 8G
- Extreme Tweaker
- SupremeFX / DTS Connect / Noise Filter
- LCD Poster
- Onboard Switches



\$349

ASUS Striker Extreme

- Intel® Quad-core CPU Ready
- Intel® Core™2 Extreme/ Duo Ready
- NVIDIA nForce® 680i SLI™
- Dual-channel DDR2 800/667/533
- SupremeFX / DTS Connect / Array Mic / Noise Filter
- Extreme Tweaker
- LCD Poster
- Onboard LED
- Onboard Switches



\$539

ASUS P5B

- Support Intel LGA775 Core™2 Extreme / Core™2 Duo / Extreme / Pentium® D CPU
- Chipset: Intel® P965
- FSB 1066/800/ 533 MHz
- Dual-channel DDR2 800/667/533, 8GB
- PCI Express 16
- 6x SATA 3Gb/s
- PCI-E Gb LAN
- 8-channel HD Audio



\$189

ASUS P5B Deluxe/ WiFi

- Support Intel LGA775 Core™2 Extreme / Core™2 Duo / Extreme / Pentium® D CPU
- Chipset: Intel® P965
- FSB 1066/800/ 533 MHz
- Dual-channel DDR2 800/667/533, 8GB
- PCI Express 16
- 6x SATA 3Gb/s
- Dual Gigabit LAN
- 8 Phase Power
- Fanless Design
- without or w/ WiFi



\$279/289

ASUS P5B-E

- Support Intel® Core™2 Extreme/ Core™2 Duo/ Pentium® Extreme/ D/ P4/ Celeron® D
- Chipset: Intel® P965
- FSB 1066/800/533 MHz
- Dual-channel DDR2 800/667/533, 8GB
- 1 x PCI-E x16, 3 x PCI-E x1
- 6 x SATA 3.0 Gb/s ports
- 2xIEEE1394a ports, 10xUSB2
- Gigabit LAN



\$209

ASUS P5B-V

- Support Intel® Core™2 Extreme/ Core™2 Duo/ Pentium® Extreme/ D/ P4/ Celeron® D
- Intel® Quad-core CPU Ready
- Chipset: Intel G965
- FSB 1066/800/533 MHz
- Dual-channel DDR2 800/667/533, 8GB
- Intel® GMA X3000 GPU integrated
- Fanless Design
- 2x1394, 10xUSB2
- Gigabit LAN/ 8 Channel HD Audio



\$219

ASUS P5B-Plus Vista

- Intel® Core2 Quad/Extreme/Core™2 Duo
- Intel® Pentium® Extreme / Pentium® D / Pentium® 4 / Celeron® D Ready
- Dual-channel DDR2 800/667/533
- AI Remote/ AP Trigger/ ASAP/ TPM
- All High-quality Conductive Polymer Capacitors
- SATA on the Go/ 1394



\$289

ASUS P5B Premium Vista

- Intel® Core™2 Quad/ Extreme/ Duo ready
- Dual-channel DDR2 800/ 667/ 533
- ScreenDUO/ AI Remote/ AP Trigger
- 8 Phase Power Design
- Heat-pipe Design & Slack Cool 2
- Crystal Sound
- All High-quality Conductive Polymer Capacitors



\$409

ASUS P5N-E SLI

- Intel® Quad-Core
- Dual-channel DDR2 800/667/533
- Great performance and overclocking
- ASUS O.C. Profile
- ASUS Fanless Design
- 2 IEEE 1394a connector onboard (1 in back + 1 on board)
- 5 x SATA 3.0 Gb/s (including 1 x SATA On-the-Go)
- ASUS Q-Connector



\$189

ASUS P5N32-E SLI

- Intel® Quad-core CPU Ready
- Intel® Core™2 Extreme/Core™2 Duo
- NVIDIA nForce® 680i SLI™
- NVIDIA Quad-SLI™ Ready
- Dual-channel DDR2 800/667/533
- 1333*/1066/800/533MHz
- SupremeFX/DTS
- Stack Cool2 and Heat-pipe Thermal Solution
- 8 Phase Power Design



\$339

ASUS P5W DH Deluxe

- Support LGA775 Intel Core2 Duo, Core2 Extreme and Dual-Core CPU
- Intel 975X + Intel ICH7R Chipset
- FSB 1066/800MHz
- Dual-channel DDR2 800/667/533, max 8GB
- 2 x PCI-E x 16 / 2 x PCI-E x 1 / 3 x PCI
- Support ATI CrossFire graphics
- Dual Gigabit LAN
- ASUS Digital Home features



\$329

ASUS P5WDG2-WS Pro

- Support Intel LGA775 Pentium 4/ Extreme Edition/ Pentium D Processors
- Intel 975X chipset / ICH7R
- ATI CrossFire
- Dual channel DDR2 667/533, Max. 8GB
- Dual PCI-E x 16
- Serial ATA 3Gb/s (RAID0, 1, 5, 10)
- Dual Gigabit Lan
- 8 USB2 ports
- IEEE 1394a



\$379

ASUS P5LD2 SE

- Support Intel LGA775 Pentium 4 CPU, Dual Core CPU ready
- Intel 945 chipset
- Dual-Channel DDR2 667/533/400, 4GB
- FSB 1066/800/533
- 4 SATA (3Gb/s)
- PCI Express
- Marvell Gbit LAN
- 8 Channel Audio
- 8 USB2 ports



\$139

Intel S5000VSASATA

- Intel Server motherboard
- Support: 1 or 2 Intel Xeon Dual Core 5XXX
- Chipset: Intel S5000V
- 32GB DDR2 533/667 MHz Buffered ECC FB DIMMs (8)
- ATI ES1000 video (16Mb)
- 2 x Intel® Gigabit Lan
- Dual-channel SATA, RAID 0, 1



\$579

GIGABYTE® 8VM800PMD 775

- Support LGA 775 for Intel® P4 processor
- VIA P4M800Pro Chipset
- DDR/1533, 2 slots, Max. 2GB
- Integrated UniChrome Pro 2D/3D Graphics
- Serial ATA with RAID
- 0, 1, JBOD
- 6-Channel AC97 Audio
- 8 USB 2.0 ports



\$79

GIGABYTE® 945GM-S2

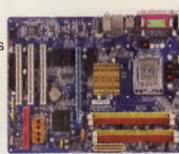
- Support Intel LGA 775 Core™2 Duo & Pentium® 4 CPU
- Intel® 945G Express Chipset
- Dual Channel DDR2 667/533 up to 4GB
- Integrated Graphics & PCI-Express
- 8 Channel HD Audio
- Gigabit Lan & Firewire
- 10 USB 2.0 ports (6 by cable)



\$129

GIGABYTE® 945G-S3

- Support Intel LGA 775 Core™2 Duo & Pentium® D and Pentium 4 CPU
- Intel® 945G Express Chipset
- Dual Channel DDR2 667/533 up to 4GB
- Integrated Graphics & PCI-Express
- HD Audio
- Gigabit Lan
- 10 USB 2.0 ports (6 by cable)
- Virtual Dual BIOS



\$139

GIGABYTE® 945PL-S3

- Support Intel LGA 775 Core™2 Duo & Pentium® D and Pentium 4 CPU
- Intel® 945PL Express Chipset
- Dual Channel DDR2 533/400 up to 2GB
- PCI-Express x16
- Realtek ALC883 Audio
- 8 USB 2.0 ports (4 by cable)
- Virtual Dual BIOS



\$99

GIGABYTE® 945P-S3

- Support Intel LGA 775 Core™2 Duo & Pentium® D and Pentium 4 CPU
- Intel® 945P Express Chipset
- Dual Channel DDR2 667/533 up to 4GB
- PCI-Express x16
- Realtek ALC883 Audio
- Gigabit Lan
- 8 USB 2.0 ports (4 by cable)
- Virtual Dual BIOS



\$129

GIGABYTE® 965G-DS3

- Support Intel LGA 775 Core™2 Duo & Pentium® D and Pentium 4 CPU
- Intel® G965 Express Chipset
- Dual Channel DDR2 800/667/533, 8GB
- Integrated Intel GMA X3000 & PCI-Express
- 8-Channel Intel High Definition Audio
- SATA 3Gb/s interface
- Gigabit Lan
- 9 USB 2.0 ports (6 by cable)



\$209

GIGABYTE® 965G-DS4

- Supports Intel® Core™2 Extreme Quad-Core / Core™2 Duo processor
- All-Solid capacitor motherboard design
- Supports Dual Channel DDR2 800 memory
- Integrated Intel GMA X3000
- 8-channel Intel HD Audio
- Extensive heat pipe and thermal pads design
- Supports Vista Premium



\$269

GIGABYTE® 965GM-DS2

- Support Intel® Core™ 2 Extreme / Intel Core™ 2 Duo processor
- Intel® G965 Express Chipset
- Dual Channel DDR2 667/533 up to 8GB
- Integrated Intel GMA X3000 Graphics & PCI-Express
- HD Audio
- Gigabit Lan
- 10 USB 2.0 ports & 3 x IEEE 1394



\$189

GIGABYTE® 965P-DS3P

- Supports Intel® Core™ 2 Extreme / Core™ 2 Duo processor
- Intel® P965 Express Chipset
- Dual Channel DDR2 800/667/533, 8GB
- Features PCI-E graphics interface
- SATA 3Gb/s
- Intel HD 8 Channels Audio
- Gigabit LAN & Firewire
- 10 x USB2 Ports



\$199

GIGABYTE® 965P-DS4

- Supports Intel® Core™2 Extreme / Core™2 Duo processor
- Intel® P965 Express Chipset
- Dual Channel DDR2 800/667/533, 8GB
- Features PCI-E graphics interface
- SATA 3Gb/s
- RAID 0, 1, 5, 10
- Intel HD 8 Channels Audio
- Gigabit LAN & IEEE 1394



\$259

GIGABYTE® 965P-S3

- Support Intel LGA 775 Core™2 Duo & Pentium® D and Pentium 4 CPU
- Intel® 965P Express Chipset
- Dual Channel DDR2 800/667/533, 8GB
- PCI-Express x16
- Realtek ALC883 Audio
- Gigabit Lan
- 10 USB 2.0 ports (4 by cable)
- Virtual Dual BIOS



\$169

GIGABYTE® 965P-DQ6

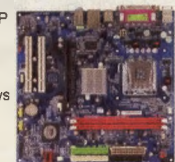
- Supports Intel® Core™2 Extreme / Core™2 Duo / Intel® Pentium® D processor
- Intel® P965 Express Chipset
- FSB Supports 1066/800/533MHz
- Dual Channel DDR2 800/667/533, 8GB
- SATA 3Gb/s with Quad eSATA II interface
- PCI-Express
- 8-channel High Definition Audio
- Gigabit LAN and IEEE 1394



\$329

GIGABYTE® VM900M

- Supports Intel® Core™2 Duo/Pentium® D/Pentium® 4 Processor
- Supports high efficiency DDR2 667 RAM
- PCI Express x16 graphics interface
- Integrated Chrome9 HC™ IGP Graphic Engine
- 8 channel High-Definition Audio
- Supports Windows Vista Basic



\$89

GIGABYTE® K8NF-9 Ultra

- Support AMD Athlon™64 X2/ 64 FX / 64
- FSB Support 1600 MHz
- Chipset NVIDIA nForce4 Ultra
- Dual Channel DDR400, 4 slots, 4GB
- PCI Express Architecture
- Gigabit LAN
- SATA 3Gb/s & RAID
- Dual BIOS
- 1394b onboard
- 8 channel audio



\$129

GIGABYTE® M51GM-S2G

- Support Socket AM2 AMD Athlon™ 64 FX / Athlon™ 64 X2 Dual-Core/Sempron CPU
- Dual Channel DDR2 800 up to 4GB
- Integrated NVIDIA CineFX 3.0 Graphics
- Supports NVIDIA SATA 3Gb/s and RAID 0, 1, 0+1, 5 function
- Gigabit Lan
- Integrated 1394
- 8 channel High Definition Audio



\$99

GIGABYTE® M55Plus-S3G

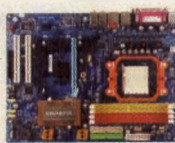
- Support: Socket AM2 for AMD Athlon™ 64 FX / Athlon™ 64 X2 Dual-Core / Athlon™ 64 / Sempron™
- nVIDIA® GeForce 6100 Chipset
- Dual channel DDR2 800/667/533, 4 slots
- Integrated VGA, PCI Express X16
- NVIDIA SATA 3Gb/s and RAID 0, 1, 0+1, 5
- Gigabit Lan



\$119

GIGABYTE® M55SLI-S4

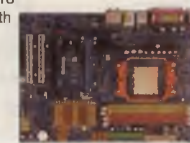
- Support: Socket AM2 for AMD Athlon™ 64 FX / Athlon™ 64 X2 Dual-Core / Athlon™ 64 / Sempron™
- NVIDIA nForce4 SLI Chipset
- Dual channel DDR2 800/667/533, 4 slots, Max. 16MB
- PCI Express X16
- SATA 3Gb/s with RAID function
- Gigabit Lan



\$119

GIGABYTE® M57SLI-S4

- Support: AMD Athlon™64 X2/ Athlon™64 socket AM2 platform
- NVIDIA nForce 570-SLI Chipset
- Dual channel DDR2 800/667/533, 4 slots, Max. 16MB
- PCI Express X16
- SATA 3Gb/s with RAID function
- Gigabit Lan



\$169

GIGABYTE® M61P-S3

- AMD Athlon™64 X2 / Athlon™64 Socket AM2 platform
- Supports Dual-Channel DDR2 800 memory
- Integrated NVIDIA® CineFX 3.0 Graphics
- NVIDIA® SATA 3Gb/s with RAID function
- Gigabit LAN and IEEE1394
- 8 channel High Definition Audio
- Supports Windows Vista Premium



\$109

GIGABYTE® M61PM-S2

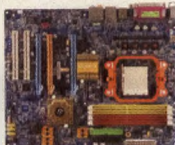
- Support: AM2 Athlon™ 64 FX/ Athlon™ 64 X2 Dual-Core / Athlon™ 64 / Sempron™
- NVIDIA® GeForce 6100 Chipset
- FSB: 2000MHz
- Dual Channel DDR2 800/667/533, Max. 16GB
- Integrated VGA & PCI Express
- Gigabit Lan & 1394
- 10 USB 2.0 ports (4 by cable)



\$99

GIGABYTE® M59SLI-S4

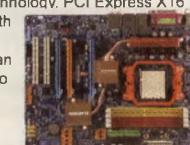
- Support: Socket AM2 AMD Athlon™ 64 FX / Athlon™ 64 X2 Dual-Core/Sempron™ CPU
- nVIDIA® nForce 590 SLI Chipset
- Dual channel DDR2 800/667, 16GB
- Integrated NVIDIA SATA 3Gb/s with RAID
- SATA 3Gb/s & RAID
- Gigabit LAN
- IEEE1394
- 8-channel High Definition Audio



\$199

GIGABYTE® M59SLI-S5

- Support AMD Athlon™64 FX/ Athlon™64 X2 socket AM2 platform
- nVIDIA® nForce 590-SLI Chipset
- Dual channel DDR2 800/667/533, 4 slots, Max. 16MB
- NVIDIA SLI technology, PCI Express X16
- SATA 3Gb/s with dual eSATA II
- Dual Gigabit Lan
- 8-channel Audio
- Dual BIOS



\$229

MSI P965 Neo-F

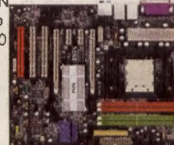
- Supports Intel 775 P4 5XX, 6XX, P4EE, Pentium D 8XX, Celeron D CPU and Conroe
- Intel® P965 Chipset
- Dual Channel DDR2 800/667, Max. 8GB
- 3 x USB 2.0 connector support additional 6 ports
- 7.1 Channel HD Audio
- Gigabit LAN



\$129

MSI K9N-SLI Platinum

- Supports AMD Athlon 64, Athlon 64 X2, Athlon FX, Sempron CPU
- nForce 570 SLI Chipset
- Dual Channel DDR2 800/667, Max. 8GB
- SATA/RAID 0/1/0+1 or RAID 5
- Dual Gigabit LAN
- 8 Channel Audio
- up to 9 x USB2.0
- IEEE 1394 port



\$189

CPU

Intel Celeron Processor

Celeron 2.8/ 3.0/ 3.3G 775 \$69/79/89

Intel Pentium 4 Processor

Pentium4 3.0G 631 / 3.2G 641 \$109/119

Dual Core 2.8G D820 / 2.8G D915 \$129/139

Dual Core 3.0G D925 / 3.4G D945 \$179/239

Core2 Duo E6300 / E6400 \$269/329

Core2 Duo E6600 / E6700 \$459/749

Core2 Quad Q6600 / Q6700 \$1249/1459

Xeon 5110/ 5120/ 5130 \$359/429/529



AMD Processor

AMD Sempron 2800 / 3000 754 \$59/69

AMD Athlon64 3500 / 3800 939 \$129/149

AMD AM2 3500 / 3800 939 \$129/139

AM2 Athlon 64 Dual Core X2 3600 / 3800 \$129/159

AM2 Athlon 64 Dual Core X2 4200 / 4400 \$219/239

AM2 Athlon 64 Dual Core X2 4600 / 5000 \$269/299

AM2 Athlon 64 Dual Core X2 5200 / 5400 \$319/379

AM2 Athlon 64 Dual Core X2 5600 / 6000 \$479/669

AMD Dual Core Opteron 265 / 270 940 \$289/339

AMD Dual Core Opteron 275 / 280 940 \$409/599



RAM

DDR RAM

256MB PC2100 / 2700 Kingston \$45/45

256MB PC3200 Kingston / Generic \$45/39

512MB PC2100 / 2700 Kingston \$79/79

512MB PC3200 Generic / Hynix \$55/65

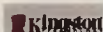
512MB PC3200 Kingston / Corsair \$69/69

1GB PC2100 / 2700 Kingston \$159/159

1GB PC3200 Kingston Single Stick \$129

1GB PC3200 Kingston (2x512MB) \$139

2GB PC3200 Kingston (2x1GB) \$249



DDR II RAM

512MB PC4200 / 5300 DDR2 Generic \$55/55

512MB PC4200 / 5300 DDR2 Kingston \$65/65

512MB PC4200 / 5300 DDR2 Corsair \$65/65

1GB PC4200 / 5300 DDR2 Generic \$99/105

1GB PC4200 / 5300 DDR2 Kingston Single Stick \$109

1GB PC6400 DDR2 Kingston Single Stick \$189

1GB PC4200 / 5300 DDR2 Kingston (2x512MB) \$129

2GB PC4200 / 5300 DDR2 Kingston (2x1GB) \$219

2GB PC6400 DDR2 Kingston (2x1GB) \$379

1GB PC4200 / 5300 DDR2 Corsair Single Stick \$119

1GB PC4200 / 5300 DDR2 Corsair (2x512MB) \$129

1GB PC5400 C4 DDR2 Corsair (2x512MB) \$159

2GB PC4200 / 5300 DDR2 Corsair (2x1GB) \$239

2GB PC5400 C4 DDR2 Corsair (2x1GB) \$329

2GB PC6400 C5 DDR2 Corsair (2x1GB) \$359

2GB PC6400 C4 DDR2 Corsair (2x1GB) \$379

2GB PC6400 C4D DDR2 Corsair (2x1GB) \$499

2GB PC6400 C4 Pro DDR2 Corsair (2x1GB) \$539

2GB PC8500 C5 DDR2 Corsair (2x1GB) \$579

2GB PC8500 C5D DDR2 Corsair (2x1GB) \$629

2GB PC9136 C5D DDR2 Corsair (2x1GB) \$719

2GB PC6400 C3DF DDR2 Corsair (2x1GB) \$739

2GB PC8888 C4DF DDR2 Corsair (2x1GB) \$979

2GB PC5400 C4 Gold DDR2 OCZ (2x1GB) \$309

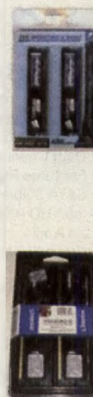
2GB PC6400 Gold DDR2 OCZ (2x1GB) \$349

2GB PC6400 SOE DDR2 OCZ (2x1GB) \$399

2GB PC6400 Platinum R2 DDR2 OCZ (2x1GB) \$369

2GB PC6400 Platinum EPP DDR2 OCZ (2x1GB) \$439

1GB PC5300 DDR2 Kingston ECC Buffered \$299



SD RAM

128MB PC133 \$29

256MB PC100 Double side \$59

256MB PC133 Double side \$59

512MB PC133 Generic \$89

512MB PC133 Hynix \$99



LAPTOP RAM

128MB / 256 MB 133 Hynix \$39/59

256 / 512MB 133 Double Sided \$89/159

256MB PC2100 / 2700 Kingston \$49/49

512MB PC2100 / 2700 Kingston \$79/79

1GB PC2700 DDR Kingston \$189

512MB PC4200 / PC5300 \$69/79

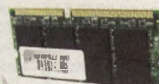
512MB PC4200 / 5300 Kingston \$79/79

1GB PC4200 / 5300 Kingston \$149/149

1GB PC4200 / 5300 Corsair \$149/149

RAMBUS RAM

256MB PC800 RAMBUS \$149



USB Key Drive

1GB / 2GB / 4GB USB2 Flash Drive \$19/39/59

Corsair 1GB / 2GB / 4GB \$29/59/99

Corsair 8GB / 16GB \$239/329

Kingston 1GB / 2GB \$29/49

Sandisk 1GB / 2GB Cruzer Micro \$29/49

Sandisk 4GB Cruzer Micro \$89

Sandisk 1GB / 2GB Cruzer Titanium \$39/59

Sandisk 4GB Cruzer Titanium \$109

Transcend 1GB / 2GB / 4GB \$29/39/69

Patriot 2GB / 4GB \$49/89



Card Reader

12 in 1 USB2 External Reader \$19

11 in 1 3.5" Int. Reader Beige, Black, Silver \$19

Sandisk 12 in 1 USB2 External Reader \$59

PCMCIA 4 in 1 Card Reader Sandisk \$49

5.25" Reader+USB+1394+Audio \$39

10GB X-Micro Slim USB Storage \$149

20GB X-Micro Slim USB Storage \$199

Iomega 35/90GB Rev Drive SATA \$529

Iomega 35/90GB Rev Drive USB Ext. \$549



Seagate



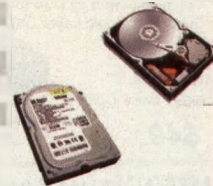
80GB 2MB / SATAII 8MB	\$59/65
160GB 8MB / SATAII 8MB	\$79/85
250GB 16MB / SATAII 16MB	\$105/109
320GB 16MB / SATAII 16MB	\$135/139
400GB 16MB / SATAII 16MB	\$185/189
500GB 16MB / SATAII 16MB	\$269/279
750GB 16MB / SATAII 16MB	\$469/479



Western Digital



80GB 8MB / SATA 8MB	\$59/65
160GB 8MB / SATAII 8MB	\$79/85
250GB 8MB / SATAII 16MB	\$99/109
320GB 8MB / SATAII 16MB	\$129/139
400GB / 500GB SATAII 16MB	\$179/249
74GB / 150GB 10K SATA 8MB	\$219/329



External Hard Drive

Lacie Porsche 80GB / 120GB 2.5" Combo	\$189/229
Lacie 160GB 2.5" USB2	\$209
Lacie Rugged 80GB / 120GB 2.5" USB2	\$219/279
Lacie Brick 320GB / 500GB 3.5" USB2	\$239/309
Lacie Porsche 500GB 3.5" USB2	\$279
Lacie 250GB / 320GB 3.5" Triple Interface	\$269/289
Lacie 500GB 3.5" Triple Interface	\$419
Lacie 500GB 3.5" Gigabit Ethernet+USB2	\$469
Maxtor 60GB / 80GB 2.5" OneTouch3	\$139/159
Maxtor 100GB / 120GB 2.5" OneTouch3	\$189/219
Maxtor 320GB / 750GB 3.5" OneTouch3	\$269/599
Maxtor 1TB / 1.5TB 3.5" OneTouch3	\$879/1099
Maxtor 300GB / 500GB 3.5" Triple Interface	\$299/439
Maxtor 1TB 3.5" Shared Storage	\$1069
Seagate 300GB 3.5" USB2	\$219



Storage

IDE Floppy Drive Panasonic Beige	\$20
IDE Floppy Drive Sony Silver/Black	\$20
USB2 External Floppy Drive	\$35

Imega 35/90GB Rev Drive SATA	\$529
Imega 35/90GB Rev Drive USB	\$549



Laptop Hard Drive

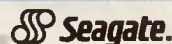


Hitachi 80GB / 100GB 5400 8MB	\$109/139
Hitachi 100GB 7200 / SATA	\$189/199
Hitachi 160GB 5400 / SATA	\$219/219



Samsung 40/ 80/ 120GB 5400 8MB	\$69/99/149
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Seagate 80GB 5400 / 7200	\$99/159
Seagate 100GB 5400 / SATA	\$149/159
Seagate 100GB 7200 / SATA	\$189/199
Seagate 120GB 5400 / SATA	\$159/169



WD 160GB 5400 SATA	\$209
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SCSI Drive

73GB Cheetah 10K Scsi 68pin Seagate	\$279
146GB Cheetah 10K Scsi 68pin Seagate	\$479

Hard Drive Accessories



Nexstar3 USB2 Enclosure

Vantec USB2 Aluminum Casing, transfer rates up to 480Mbps w/ USB2.0, hot-swappable: plug and play without rebooting
Available in blue, black & red color
2.5"/3.5"/5.25"

\$35/55/65



Nexstar3 USB2 & 1394 Enclosure

Vantec USB2 & 1394 Combo Aluminum Casing, transfer rates up to 480Mbps w/ USB2.0, support firewire, hot-swappable: plug and play without rebooting, Available in blue, black & red color
2.5"/3.5"/5.25"

\$55/75/75



Nexstar3 3.5" SATA & USB2 Enclosure

Vantec SATA & USB2 Aluminum Casing, transfer rates up to 3Gbps w/ eSATA and 480Mbps w/ USB2.0, hot-swappable: plug and play without rebooting, supports up to 400GB Hard Drives, Available in black color

\$65



Nexstar LS 3.5" Lan Enclosure

Vantec NexStar:LS LAN Share, an Ethernet and USB 2.0 combination IDE HDD enclosure for instant and secure LAN connection with simple driver installation, making it the perfect centralized storage center for small office or home.

\$105



2.5" HDD Enclosure

- Super slim and compact, easy to carry
- Maximum capacity: 80GB
- Dimensions: 127 x 79 x 16mm
- USB2 or USB2 & 1394 Combo Interface

USB2 \$19
Combo \$45



3.5" HDD Enclosure

- Power supply: external power supply
- The maximum support capacity 160GB
- Super slim and easy portability
- Dimensions: 175 x 110 x 33mm
- USB2 or USB2 & 1394 Combo Interface

USB2 \$39
Combo \$55



5.25" HDD Enclosure

- ATA66/100 supported
- Plug-and-play & hot-swappable
- Dimension: 250x155x51 (mm)
- Super slim
- USB2 or USB2 & 1394 Combo Interface

USB2 \$39
Combo \$65



3.5" X-Craft IDE

- Tool-free & Easy Installation
- Fan-less Silent Heat Dissipation

- HDD Shock-proof Mechanism
- Supports All 3.5" PATA or SATA Hard Disk Drives up to 500G
- Attractive Blue LED for power and red LED for HDD Activity

\$49



3.5" X-Craft eSATA

- Tool-free & Easy Installation
- Fan-less Silent Heat Dissipation

- HDD Shock-proof Mechanism
- Supports All 3.5" PATA or SATA Hard Disk Drives up to 500G
- Attractive Blue LED for power and red LED for HDD Activity

\$59



ViPower Aluminium Mobile Rack VP-410LS2FU

- IDE UDMA 133/100/66
- Compatible with 3.5" IDE devices
- Aluminum
- Two Fans
- Available in Black
- Dimensions: 8.4"(D) x 5.8"(W) x 1.6"(H)

\$40



ViPower SATA Mobile Rack VPP-2010LS2F

- Compatible with Serial ATA 1.0 /2.0 devices
- Plastic, Hot-Swap, Plug-n-Play
- Two Fans, Latch switch power switch
- Dimensions: 7.4"(D) x 5.8"(W) x 1.6"(H).

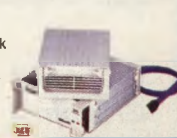
\$35



ViPower SATA Aluminium Mobile Rack VP-5010LSF

- Compatible with Serial ATA 1.0 devices
- True Aluminum
- Hot-Swapable
- Available in Black
- Dimensions: 7.4"(D) x 5.8"(W) x 1.6"(H).

\$55



LG H22NBB DVD-RW

- 18X Super Multi DVD Rewriter
- Compatible with all DVD formats
- Supports Double Layer DVD+R / -R

Available in:
Beige / Black Color

\$49



LG H20LBB Lightscribe

LG GSA-H20LB 16+/- Dual Layer DVD-RW With Lightscribe

Available in:
Beige / Black Color

\$69



LITEON LH-18A1P DVD-RW

LiteOn 18x Dual Layer DVD-Writer, 18x 8x 8x / 18x 8x 6x / 12x / 16x / + 48x 32x 48x E-IDE, support DVD-RAM, Double Layer DVD+/-R, SMART-BURN, SMART-X, ABS mechanism. Included Nero6 & Power DVD

Available in: Beige / Black

\$49



LITEON LH-18A1H DVD-RW

Lightscribe

- Lightscribe technology to print labels directly to the disk using the same drive
- Burns an image on to one side of the lightscribe disk and record the data on to the other side

\$59



LITEON SHM-165P6SU

External DVD-RW

External 16x 8x / 8x / 16x 6x / 4x / 5x / + 48x 24x 48x E-IDE Super AllWrite, support Double Layer DVD+/-R, DVD-RAM, SMART-BURN, SMART-X, ABS mechanism

\$129



Pioneer 112D

DVD-RW

- 18x maximum recording speed
- Double-layer technology
- OEM drive

Available in:
Beige/ Black/ Silver

\$59



Pioneer 212D SATA

Pioneer DVR-212D 18X DVD/CD Writer with SATA interface. 8x +/-Dual Layer, 18x DVD+/-R, 6x DVD-RW/8x DVD+RW, 40x CD-R, 32x CD-RW. Features "Buffer Under Run" protection, "Quiet Drive" firmware utility

Available in:
Beige/Black

\$69



Pioneer A12XLA

Pioneer DVR-A12XLA Retail DVD-RW, 8X / 18X Dual/Single, 12X RAM write, Includes Cyberlink DVD Solutions Software

Available in:
Beige/ Black/ Silver

\$89



Pioneer DVR-K06

Slim DVD-RW

Pioneer DVR-K06 8X8 DVD-RW, Slot Black Color, Dual layer -R & +R. Slimline OEM drive, suitable for compatible notebooks and 12.7mm drive bays.

\$139



Pioneer BDR-101A

Blue Ray DVD-RW

The Pioneer BDR-101A Blu-ray Disc/DVD writer is expected to revolutionize digital and high-definition media storage.

\$1399



ASUS 1612BL

Lightscribe DVD-RW

Asus 1612BL Lightscribe DVD-RW, Available in:
Beige / Black Color

\$59



SAMSUNG SH-162LBERN

Lightscribe

Samsung SH-S162LBERN DVD +/-RW drive with lightscribe, include Nero software

\$59



SONY AWG170A10/ AB

• SONY Dual Layer DVD+RW/+R, DVD-RW/-R OEM drive, 18x DVD+/-R, 8x +RW, 8x +R DL 6x -RW, 4x -R DL & 5x DVD-RAM

Available in:
Beige / Black

\$59



SONY DRU830A

DVD-RW

- DVD-Recording speed 18X max.
- Double Layer +R performance to 8X.
- Includes Nero 6.6 SW & Black Face Plate

\$95



SONY DWQ520A10

Slim DVD-RW Black

Sony Black Dual Layer Slim DVD Burner. 8/8/4/1/8/6/4 (DVD+R/+RW/+R DL/DVD-R/-RW/-R DL).

\$135



SONY DRX830UL Ext.

Dual Layer DVD-RW

- Burn Double Layered DVDs in both +&- formats.
- 8X Double Layer burning
- 18X DVD Recording/play-back
- USB & 1394 interface

\$189



CD Media

Benq 80min CD-R 50pcs spindle	\$15
Shintaro 80min CD-R 50pcs Printable	\$18
TDK 80min CD-R 50pcs spindle	\$19
TDK 80min CD-R 100pcs spindle	\$33



DVD Media

Benq DVD-R / +R 16x 50pcs spindle	\$19
Benq DVD+RW 4x 10pcs	\$12
HP DVD-R / +R 16x 50pcs spindle	\$25
Laser DVD-R / +R 16x 50pcs spindle	\$19
Philips DVD-R / +R 16x 50pcs spindle	\$25
Philips DVD+RW 4x 10pcs	\$12
Ritek DVD-R / +R 8x 50pcs spindle	\$23
Ritek DVD+RW 4x 10pcs	\$12
Shintaro DVD-R / +R 16x 50pcs spindle	\$25
Shintaro DVD+RW 4x 10pcs	\$15
TDK DVD-R 16x 70pcs spindle	\$39
TDK DVD-R / +R 16x 100pcs spindle	\$55
TDK DVD+R Dual Layer	\$5

Verbatim DVD-R / +R 16x 50pcs spindle	\$29
Verbatim DVD-R Dual Layer	\$5

Panasonic DVD-RAM 4.7G w/Cartridge	\$8
Panasonic DVD-RAM 9.4G	\$15



Zip Disk

Zip Disk 250MB	\$20
Zip Disk 750MB	\$23

Tablet

WACOM Graphire4 Tablets

Graphire4 gives you the control you need to quickly and easily edit your digital photos. It works great with any software your mouse does and runs on both PCs and Macs. Draw, paint, create artwork for CDs/DVDs, sign your name, and annotate documents in Adobe Acrobat or Microsoft PowerPoint. You can even write directly in Microsoft Office XP and with Apple Inkwell. With both a Wacom pen and mouse you'll have the right tool for any task. Using them alternately reduces repetitive motion. Join more than 2,000,000 satisfied Wacom tablet users and get the control, comfort, and productivity of Graphire today.

(Mouse is not included in the package for both Graphire4 and Intuos3)



Graphire4 4x5: \$129
Graphire4 6x8: \$219

WACOM Intuos3 Tablets

Intuos3 gives you the power to quickly and professionally edit photos and create digital artwork by turning on the full power of Adobe® Photoshop®, Corel® Painter™, and over 100 other leading software applications. Intuos3 tablets now put ExpressKeys™ and Touch Strips right at your fingertips for convenient keyboard shortcuts, scrolling, zooming, brush size control, and more. Wacom's Penabled™ technology gives you the natural feel and superior performance of Wacom's patented cordless and battery-free tablet technology. You'll find that using an Intuos pen, mouse, and tablet gives you more control, comfort, and productivity. Alternating between the comfortable Grip Pen and the ergonomic five-button Intuos3 mouse reduces repetitive motion. It's an easy and natural way to work.



Intuos3 4 x 6: \$299 **6 x 8: \$419**
Intuos3 9x12: \$569 **12x12: \$699**
Intuos3 Wide format 6x11 \$569

Notting Hill (Head Office)
7 Howleys Rd., Notting Hill
Tel: (03) 8542 8688
Fax: (03) 9562 8781

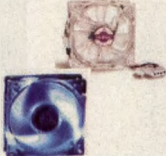
West Melbourne Branch
130 Dudley St., West Melbourne
Tel: (03) 9223 4288
Fax: (03) 9328 1899

Antec 80mm/92mm/120mm Tricool Case Fan

Antec (USA) 80, 92 or 120mm Case Fan with LEDS, comes with a 4-pin power connector and a separate signal connector to motherboard.

Available in:
green, blue and red

80/92/120mm



\$25/25/35

ASUS Silent Square Pro

- Superior performance: AMD and Intel Dual-Core CPU Support
- Quiet: 18dBA for normal operation
- Universal application: K8, 775, 478 platform
- Aesthetics: fancy look with LED light
- Reliable: VRM thermal protection
- Easy assembly: innovative smart retention module design

\$69

ASUS Silent Knight

- All Copper, Ultra Cooling for Dual-Core CPU, CPU Support: Intel® Core™2 Extreme/ Core™2 Duo/ Pentium® D/ Intel® Pentium® 4 HT/ Celeron® D & AMD Athlon™ 64 X2/ FX (Dual-Core) AMD Athlon™ 64/ Sempron™
- Fan Speed 2,200 rpm ± 10% • Material Cu. Base + Cu. Punched Fins (128 fins) + 6 Heat Pipes

\$69

COOLER MASTER NotePal W1

- World first customized widescreen notebook cooler
- Efficiently reduce the temperature of notebook
- Enhance notebook stability and durability
- Ergonomic design offers best in comfort and productivity
- Super silent solution for notebook cooling
- All Aluminum curvy design
- Directly consume power from notebook

\$59

COOLER MASTER Mars

- Compatible with AMD Socket AM2 and Intel Core 2 Duo
- Embedded silent fan with shockproof design
- Unique shape design with 2 blue LED light
- Aluminum heat sink with 3 heat pipes and copper base
- Intelligent Fan Speed Controller
- Lead-free Production

\$79

COOLER MASTER Eclipse

- Compatible with AMD Socket AM2 and Intel 775 CPU
- Aluminum heat sink and copper base with 4 heat pipes
- Gliding fan duct design
- Special turbine fan design
- Intelligent Fan Speed Controller
- Flexible assembling applications
- Lead-free production

\$89

Thermaltake Hardcano 13

- Ideal solution for integration of a smart card reader and Fan controller into the desktop
- Suit for 5.25" Drive Bay
- The best 6 in 1 Card Reader- compatible with 6 different media: CF/IBM Microdrive/SM/SD/MMC/MS
- Great combination with fan controller and monitoring device
- Large EL back light LCD Monitor with 8 colors
- Precision Electronic Button Control

\$109

Thermaltake Blue Orbll

- Patent Radian Crotched Fin- provides superior air flow
- Copper Core Construction-allows for rapid heat transfer & increased thermal conductivity
- Silent Blue LED Fan- whispering 17dBA
- Massive Aluminum fin count: 140fins - maximizes heat dissipation area

\$59

Thermaltake Big Typhoon VX

- Application for Intel P4 LGA 775, AMD K7, K8
- 6 Heatpipes, transfer the heat quickly
- High density aluminum fins provide more surface area for good heat dissipation
- Copper base solder
- 12 cm silent fan, perform well at low noise, 16dB only

\$79

Thermaltake Mini Typhoon

- Best performance, supports up to TDP 130W
- Heatsink:
 - 6 heatpipes, maximized heat transfer
 - All copper structure, provides extremely fast heat conductivity
 - 0.2mm thick copper fins and perfect fin rate
 - Waved fins
- 3 in 1 application for LGA775, K8 and AM2
- RX Type Flow reduce the noise to only 18dBA

\$69

Thermaltake BigWater 745 Liquid Cooling System

- Application for Intel P4 LGA775 Intel BTX platform and all AMD K8 series
- Remarkable 120mm Radiator
- Superb Liquid Pump with 400 L/hr
- Exceptional Liquid Tank
- Second-to-none Copper Water Block
- Durable 3/8" Tube

\$199

Thermaltake 80/120mm Smart Case Fan

Thermaltake Smart LED Fan :

1. Full speed when jumper on
2. Temperature control : Fan speed varies according to the temp detected by the sensor
3. Manual control : Adjust fan speed manually

\$19/25

GIGABYTE ED821-MF

- Supports AMD Athlon™ TM FX 55 / Athlon™ TM 64 4000+
- Large 9425 fan also cools surrounding components
- Large diameter pure copper core
- Adjustable fan speed control panel (1700 ~ 3500RPM)
- High airflow & low noise fan frame design 19 dB(A)

\$39

GIGABYTE PDU21-MF

- Universal 4-in-1 design fits all mainstream platforms
- Omni-directional cooler design with new advanced sintered powder wicks
- Quad high-performance heatpipes
- Quad-Way Airflow Design
- Solid pure copper base with nickel-plating finish
- Sparkling fan control box (1700 ~ 3200 rpm)

\$59

GIGABYTE GH-WIU02 3D Galaxy II

- Large, copper base with unique water path
- Long-life, quite, powerful ceramic bearing pump
- Low water-level protection and over-temperature protection
- Clear blue LED tank
- Large aluminum radiator with 4-part water-path design
- Radiator

\$249

ZALMAN Reserator1 Plus Fanless Water Cooler

Reserator 1 Plus Fanless Water Cooling System, Anodized Pure Aluminium BLACK, Incorporates Zalman's HCET (High Capacity Extrusion Technique) technology, unites the functions of a reservoir/radiator/water pump, Max 2.5L Coolant Capacity, Integrated 5W Qmax 300L/h water pump

\$339

ZALMAN Fatality FS-V7

Zalman FS-V7 Fatality (Copper) Video Card Cooler, 2 Ball bearings, 80mm fan with red LEDS installed in the heatsink (FHS) cools not only the VGA chipset and VGA RAM, but all other VGA components as well, Ultra large surface area for excellent heat dissipation, Fan Speed: 3500RPM, Noise Level: 36dB

\$49

ZALMAN VF700-CU VGA Fan

Zalman VF700-Cu (Copper) Video Card Cooler, 2 Ball bearings, Fan Speed: 1350 ~ 2650RPM (+/- 10%), Noise Level: 18.5 ~ 28.5dB

- Does not generate noise or vibration in Silent Mode
- Pure Copper base material
- Silent Mode and Normal Mode selection

\$49

ZALMAN VF900-CU VGA

Zalman VF900-Cu LED (Copper) Dual Heatpipe Video Card Cooler with Blue LEDS, 2 Ball bearings, Includes VGA RAM Heatsinks and Fan Speed Controller, Fan Speed: 1350RPM±10% (Silent Mode), 2400RPM±10% (Normal Mode), Noise Level: 18.5±10% (Silent Mode), 25dB±10% (Normal Mode), Heatsink Dimensions - 96(L) x 96(L) x 30(H) mm, Weight - 185g

\$59

ZALMAN Fatality FS-C77

Zalman Fatality FS-C77 (Copper) CPU Cooler, for Intel S775/478 and AMD S754/939/940 CPU's, 120mm fan with red LEDS, Pure Copper material, Dissipation area: 3.268 cm cub, 2 Ball bearing Sets, Speed: 2400RPM, Thermal Resistance: 0.17 C/W, Noise level: 42.5dB

\$79

ZALMAN CNPS 7700-CU

- Compatible with Intel Pentium4 Socket 775/478, AMD Sempron/AMD64 Socket 754/939/940 CPUs
- Does not generate noise or vibration
- Pure Copper base materials
- Large 120mm fan inside the FHS
- Adjustable fan speed controller

\$69

ZALMAN CNPS 8000

- Compatible with Slim and LowProfile Computer
- Noiseless and vibration-free operation
- Optimum performance and quick heat dispersion achieved with the use of 4 heatpipes.
- Compatible with Intel Socket 775, AMD Athlon 64 X2 Socket 939 and AMD Sempron/AMD64 Socket 754/939/940
- Ultra quiet 92mm fan.
- FAN MATE 2 included for manual adjustment of fan speed.

\$69

ZALMAN CNPS 9500 LED

- 100% copper heatsink with aerodynamically optimized "tunnel"
- Innovative and patented, curved heatpipe
- Optimized heatsink layout
- Ultra quiet 92mm opaque fan with blue LEDS
- 0.2mm ultra-slim fins
- Aerodynamically optimized heatsink
- Compatible with Intel 775 & AMD 939 CPUs

\$79

ZALMAN CNPS 9700 LED

Zalman CNPS9700LED CPU Cooler, Intel Socket 775, AMD Socket AM2/754/939/940, 2 Ball-bearing fan, Speed: 1250RPM±10% Silent Mode, 2800RPM±10% Low-Noise Mode, Noise Level: 19.5dB±10% Silent Mode, 35dB±10% Low-Noise Mode, 100% copper heat-sink with aerodynamically optimized tunnel design

\$99

Antec SLK1650
Antec 1650, beige/black, 350W ATX12V PSU, 8 drive bays: Ext: 3x 5.25", 2x 3.5" Int: 3x 3.5", front USB



\$109

Antec Nine Hundred
Antec 'Nine Hundred' Gaming Case with Side Window - Black, NO PSU, 9 Drive Bays, Top mounted 200mm exhaust fan, Top USB/IEEE1394/Audio



\$189

Antec Atlas
Antec 'Atlas' Server Case - BLACK, 550W PSU, 8 drive bays 4 x 3.5" internal & 4 x 5.25" external, Front USB/IEEE1394 & Audio ports, ATX



\$229

Antec PlusView II
Antec 'PlusView II' Performance TX - GREY, NO PSU, 10 drive bays, Windowed Side Panel, Washable air filter, front USB/1394/Audio in/out, ATX



\$125

Antec P150
Antec P150 'Performance One' ATX Mid Tower - High Efficiency 430W NEO HE PSU, 4 removable HDD bays, 120mm TriCool FAN, Front USB, Audio, 1394, ATX



\$239

Antec P180
Antec P180 Performance - NO PSU, 11 Drive Bays, up to 5 Configurable Fans, Front USB/IEEE1394/Audio



\$219

Antec Sonatall
Piano Black, TruePower 430W PSU, Ultra Quiet Design, Blue LED, Front USB/IEEE1394/Audio, Washable air filter



\$185

Antec Solo
Antec 'SOLO' ATX MiniTower - Black/Silver, NO PSU, Piano Black Finishing, Drive Bays: 4x5.25" Ext, 4x3.5" Int, front USB/Firewire/Audio In & Out



\$145

Antec NSK1300
Antec NSK 1300, 300W PSU, Four drive bays: 1 x external 5.25", 3 x internal 3.5", Flip-Up drive cage, front ports include: 2 x USB, 1 x Audio In & Out, Three-layer side panel



\$139

Antec NSK2400
Antec NSK 2400 MicroATX Desktop Case - Black with Silver Bezel, 380W PSU, Drive Bays: 2x5.25" External, 2x3.5" Internal, 2xUSB



\$139

Antec NSK4400
Antec NSK 4400 MiniTower - Black with Silver Bezel, 380W PSU, Drive Bays: 3x5.25" & 2x3.5" External, 3x3.5" Internal, 2 x USB



\$139

Antec NSK6500
Antec NSK 6500 - Black with Silver Bezel, 430W PSU, Drive Bays: 3x5.25" & 1x3.5" External, 5x3.5" Internal, 2xUSB



\$159

Antec Minuet 300
Antec 'Minuet II' Slimline Case - Piano Black/Chrome, 300W PSU, 3 Bay drives, Top Panel with Vents, Front USB/IEEE1394/Audio, MicroATX



\$119

Antec Fusion
Antec 'Fusion' Desktop Case - Silver, VFD, 430W PSU, drive bays: 1x5.25" external & 2x3.5" internal, front USB/IEEE1394/Audio, mATX



\$279

Antec 4U22A Rackmount
black color, NO power supply, fits 12"x13" motherboard, lockable front cover Size: 335 x 570 x 700 mm



\$189

Antec Take3 Rackmount
3U Antec 'TAKE3' Quiet Rackmount Chassis, drive bays: 2 x 5.25" + 1 x 3.5" External, 3 x 3.5" Internal, 7 Expansion Slots, 450W PSU



\$399

AOpen QF50B
Big Size Midi-Tower, P4 Ready, Front USB / Audio, 300w ATX Power Supply, Black/ Silver Color Available



\$109

AOpen H360
• 250W or 300W peak proprietary
• FlexATX/MicroATX slim
• Supports front USB Audio, 1394 (optional)
• Changeable for Tower & Desktop



\$109

AOpen KA50
AOpen KA50 EZ solution has excellent expandability: 11 drive bays and 7 slots. 5.25" : 4 / 0 (external/internal) 3.5" : 2 / 5. Screwless & Easy installation



\$159

AOpen H600A/B
ATX/microATX/Full AT board; Drive Bays: 5.25 x 4/0, 3.5 x2/1 (external/internal); 300 W ATX 12V high efficiency PSU; Front USB & Audio: 2 USB / Ear phone / Mic. In / 1394



\$129

AOpen H700A/B
Full Tower Case with 300W PSU. Board Size: ATX/microATX; 7 slots and 13 drive bays; Bend-in edges ensure safe assembly; High quality of 1mm thick steel



\$169

COOLER MASTER Elite 330
Tool-Free mechanical design; Meshed front panel; Built-in washable front air filter; 120mm fans in the front and rear; Solid construction makes the chassis durable and sturdy



\$85

COOLER MASTER Centurion V
• Front and side venting holes
• Screw-less locking
• Top I/O panel
• 430W PSU
• 120mm Case fan



\$115

COOLER MASTER Centurion 532
• Front and side venting holes • Screw-less locking
• Top I/O panel • 380W PSU



\$115

COOLER MASTER Mystique 632
Aluminum alloy, meshed front panel design; 120mm fans in the front and rear; Screw-less design; Built-in washable front air filter



\$169

COOLER MASTER ITower930
front hot swap module; Overall fixed tool-free design; Superior Thermal Solution; Durable 0.8mm cold rolled steel construction; Key lock and intrusion switch design



\$199

COOLER MASTER Stacker 830
Value-added functionality, Unmatchable upgrade ability, Tool-free user-friendliness. Superior Airflow, Innovative Style
Available in: Silver or Black



\$309

LIAN LI PC60/61
Aluminium Case Silver or Black. Drive bays: 4x5.25", 3x3.5", 5x3.5" internal. Front USB: 2 ports.



\$189

LIAN LI V1000+
Aluminium Case, Drive bays: 5x5.25", 6x3.5" int. 2 x 12CM ball bearing fans. Front I/O: IEEE 1394x1, USB2.0x2



\$279

LIAN LI V1100
Aluminium Medium Tower. Drive bays: 5x5.25", 6x3.5" internal. Front IEEE 1394 x 1, USB 2.0 x 2, MIC x 1, EAR x 1. Aluminum door with lock
Available in: Aluminum or Black



\$379

GIGABYTE GZ-XCCL
Gigabyte slim design case coming with a Gigabyte True ATX 2.0 24/20 pin 300W power supply.



\$85

GIGABYTE Aurora
• Aluminum body, high-end
• Supports all liquid cooling sys
• Dual security lock



\$179

SILVERSTONE LC13
SilverStone LC13 ATX Desktop Case - Aluminium build, drive bays: 2x5.25"/2x3.5" external, 2x3.5" internal, Front USB2.0/IEEE1394/Audio/MIC, NO PSU
Available in: Black or Silver



\$155

SILVERSTONE LC17
SilverStone LC17 ATX Desktop Case - Aluminium build, drive bays: 2x5.25"/1x3.5" ext, 6x3.5" int, Front USB2.0/IEEE1394/Audio/MIC, NO PSU
Available in: Black or Silver



\$125

SILVERSTONE LC14M
SilverStone LC14M Aluminium build, VFD, Front USB2.0/IEEE1394/Audio/MIC, IR Remote, iMon, NO PSU
Available in: Black or Silver

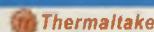


\$279

SILVERSTONE LC16M
SilverStone LC16M Aluminium build, VFD, Front USB2.0/IEEE1394/Audio/MIC, IR Remote, iMon, NO PSU
Available in: Black or Silver



\$299

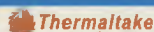


Soprano VB1430

- High Efficient ventilation
- Tool-Free when installing 5.25" & 3.5" device
- Dual USB 2.0, IEEE 1394, Audio & Speaker ports



\$139/139

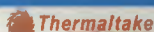


Armor Jr VC3430

Thermaltake Armor Junior ATX Case, Dual 120mm silent front and back case fans Fits Thermaltake liquid cooling system. 430W PSU



\$199/229

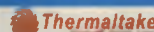


Armor VA8000

Armor, Optimized Thermal Management, offers a great amount of space: Front Accessible 10 x 5.25", 2 x 3.5" and Internal 6 x 3.5"



\$249/289



Eureka VC8000

Eureka Full tower, all aluminum chassis, 120mm silent front and rear case fans, Honeycomb see-through side panel, 430W PSU



\$259/259

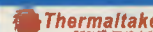


Lanbox VF1000

The Lanbox supports Micro ATX form factor and mini ITX form factor motherboards, it also supports nVidia and ATI CrossFire technology. It comes with window and handle. Black or Silver Aluminium in color.



\$189/209



Matrix VD3430

- Super light 3.8 kg, solid constructed
- All mesh design front panel
- 12cm silent fan front & rear
- Dual USB 2.0, IEEE 1394 Firewire, Audio & Speaker ports
- 430W PSU



\$169

ASUS TA881

- Superior Thermal Solution
- Friendly Mechanical Design
- Flexible Expansion Choices
- 350W Power Supply



\$69

ASUS TA582

- Excellent Cooling System
- Flexible Configuration
- Considerate Design
- 350W Power Supply



\$79

ZALMAN HD160

Zalman HD160 HTPC ATX case, VFD display, Remote Controller, 2 x USB, 1 x IEEE1394, 2 x 80mm rear exhaust fans, 17-in-1 card reader, NO PSU



\$399

ASUS V3-P5V900

ASUS V3 P5V900 KT, 775+Core2Duo/ QuadCore, Gigabit Lan/6-Ch Audio/PCI-E x 16, Value Micro-ATX Tower



\$179

ShuttleSS30G2

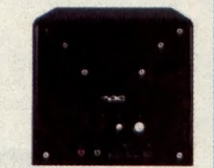
Shuttle SS30G2, LGA775, S/S662, FSB800, DDR2, Int. VGA, PCI-Express x16, 10/100 LAN, IEEE1394a, USB2.0, 6Ch, 240W PSU



\$349

ShuttleSD32G2

Shuttle SD32G2, LGA775, i445G, FSB1066, Dual DDR2 667, PCI Express x16, SATA1 300, GbE LAN, USB2.0, 8Ch Audio, 250W PSU



\$449

Antec EarthWatts

"Antec" EarthWatts ATX Power Supply, 80 PLUS certified, 80mm low noise cooling fan, Dual 12V outputs, 1 x PCI-Express, 4 x SATA, 6 x IDE



430W \$99
500W \$129

Antec TruePower Trio

Antec TruePower Trio PSU, 120mm fan, Dual PCI-E & 4 SATA Connectors



430W \$109
550W \$159
650W \$199

Antec NeoHE 2.2

Antec Neo Highly Efficient 2.2 ATX & EPS 12V Power Supply, Noise Level less 18dBA, includes PCI-Ex Graphics Card Connector, SATA Connectors



500W \$149
550W \$169

Antec Phantom 500W

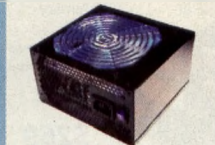
- Fanless design
- Ultra-high-efficiency circuitry
- Dual +12V output circuits
- ATX12V v2.0



\$229

OCZ GameXStream

OCZ SLI-Ready GameX-Stream are designed for the demanding computing environments of PC Enthusiasts



600W \$179
700W \$209

ZALMAN Noiseless

ZM460/ ZM600
• ATX12V PSU, supporting Intel Pentium 4 and AMD CPUs • Come with SATA connectors



460W \$139
600W \$189

COOLER eXtreme

Coolermaster eXtreme PSU, enhances system reliability by preventing mains abnormal supply from spikes and surges.



430W \$59
550W \$89
650W \$119

COOLER iGreen

iGreen Power is the world first power supply which achieves 85% efficiency through Double Forward Switching Circuit Technology.



500W \$129
600W \$159

COOLER Real Power

Pro 850W
• First six +12V rails for better power distribution in Quad-SLI and 2 ways server
• Four 6 pin PCI-E connector
• Ultra-silent operation with intelligent 135mm fan speed control (< 16dBA)



\$279

SILVERSTONE ST60F

SilverStone ST60F 600 Watt Power Supply, SLI ready, Titanium black, 120mm fan, 100% modular cabling system, Active PFC, min 24 dBA



\$189

SILVERSTONE ST652 / 752

SilverStone 650 or 750 Watt Power Supply, SLI ready, Titanium black, 80mm fan, Dual PCI-E 6pin / Four SATA connectors, Active PFC



650W \$179
750W \$219

Thermaltake ToughPower

- SLI, Cross-Fire, and Dual Core CPU ready
- Extremely good voltage regulation



600W \$179
750W \$229
850W \$289

APC CS/ES 500VA

APC Back UPS CS or ES 500 VA are reliable power protection for office and home office computers. It has USB support 500VA/300 watts capacity, USB compatible, hot swap batteries, RJ-11 Modem/Fax/DSL protection, unattended shutdown, also includes s/w and USB cable.



CS \$139
ES \$179

APC Back-UPS RS

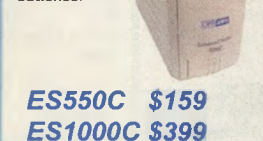
APC RS Series, High Performance Battery Backup & Protection for Business Computers. Up to six battery backup outlets with automatic voltage regulation (AVR) enable you to work through even the most frequent brownouts and power sags, keeping 75/90/110 minutes of battery power for when you need it most.



1000VA \$469
1500VA \$569

OPTIUPS Enhanced Se

The OPTI-UPS Enhanced Series is affordably priced line interactive power protection engineered for networks and stand-alone systems. These units feature data-line surge protection and user replaceable batteries.



ES550C \$159
ES1000C \$399

POWERWARE3105

UPS Series

The compact Powerware 3105 UPS makes it affordable for the smallest offices and home offices to have surge suppression and backup power to protect PCs, peripherals, fax machines, and telephone equipment.

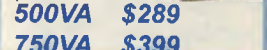


350VA \$69
500VA \$79
700VA \$99

POWERWARE5115

UPS Series

The Powerware 5115 UPS offers excellent backup power protection and power quality management for PCs. It delivers basic surge protection and backup power, it additionally offers the best UPS power protection against five of the nine common power quality problems.



500VA \$289
750VA \$399

ASUS 256MB 7300GS HTD PE
 Chipset NVIDIA GeForce 7300 GS
 Memory 256MB, 64bits DDR2
 Bus PCI-Express
 TV out, DVI Port, Twin View
\$89



ASUS 256MB 7300GT Silent HTD PE
 Chipset NVIDIA GeForce 7300 GT
 Memory 256MB, 128bits DDR2
 Bus PCI-Express
 TV out, DVI Port, Twin View
\$129



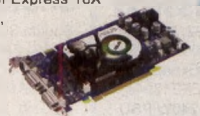
ASUS 7600GS Silent HTD PCIE
 Chipset NVIDIA GeForce 7600 GS
 Memory 256/512MB, 128bits DDRII
 Bus PCI Express 16X
 TV out, DVI Port, Twin View
 256MB \$139
 512MB \$169



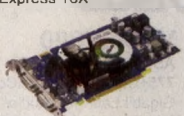
ASUS 256MB 7600GT 2DHT PCIE
 Chipset NVIDIA GeForce 7600 GT
 Memory 256MB, 128bits DDRIII
 Bus PCI Express 16X
 TV out, DVI Port, Twin View
\$189



ASUS 256MB 7900GS 2DHT PCIE
 Chipset NVIDIA GeForce 7900 GS
 Memory 256MB, 256bits DDRIII
 Bus PCI Express 16X
 TV out, DVI Port, Twin View
\$279



ASUS 512MB 7950GT HTDP PCIE
 Chipset NVIDIA GeForce 7950 GT
 Memory 512MB, 256bits DDRIII
 Bus PCI Express 16X
 TV out, Dual DVI Port, Twin View
\$409



ASUS 640MB 8800GTS HTDP PCIE
 Chipset NVIDIA GeForce 8800GTS
 Memory 320/640MB, 320bits DDRIII
 Bus PCI Express 16X
 TV out, Dual DVI Port, HDTV
 320MB \$529
 640MB \$709



ASUS 768MB 8800GTX HTDP PCI E
 Chipset NVIDIA GeForce 8800GTX
 Memory 768MB, 384bits DDRIII
 Bus PCI-Express 16X
 Dual DVI, HDTV
 HDCP Compliant
\$959



GIGABYTE 256MB 7600GS TD AGP
 Chipset NVIDIA GeForce 7600GS+His
 Memory 256MB, 128bits DDRIII
 Bus AGP 8x
 TV out, DVI Port, D-SUB, MultiView
\$189



GIGABYTE 7300GS TD PCI E
 Chipset NVIDIA GeForce 7300GS
 Memory 128/256MB, 64bits DDRII
 Bus PCI-Express 16x
 TV out, DVI Port, Twin View
 128MB \$75
 256MB \$89



GIGABYTE 256MB 7300GT TD PCI E
 Chipset NVIDIA GeForce 7300GT
 Memory 256MB, 128bits DDRII
 Bus PCI-Express 16x
 TV out, DVI Port, Twin View
\$129



GIGABYTE 7600GS TD PCI E
 Chipset NVIDIA GeForce 7600GS
 Memory 256/512MB, 128bits DDRII
 Bus PCI-Express 16x
 TV out, DVI Port, Twin View
 256MB \$149
 512MB \$179



GIGABYTE 256MB 7600GT TD PCI E
 Chipset NVIDIA GeForce 7600GT
 Memory 256MB, 128bits DDRIII
 Bus PCI-Express 16x
 TV out, DVI Port, Twin View, HDTV
\$199



GIGABYTE 256MB 7900GS TD PCI E
 Chipset NVIDIA GeForce 7900GS
 Memory 256MB, 256bits DDRIII
 Bus PCI-Express 16x
 TV out, Dual DVI Port
\$269



GIGABYTE 512MB 7950GT TD PCI E
 Chipset NVIDIA GeForce 7950 GT
 Memory 512MB, 256bits DDRIII
 Bus PCI Express 16X
 TV out, Dual DVI Port, Twin View
\$399



GIGABYTE 640MB 8800GTS TD PCI E
 Chipset NVIDIA GeForce 8800GTS
 Memory 640MB, 320bits DDRIII
 Bus PCI Express 16X
 TV out, Dual DVI Port, HDTV
\$689



GIGABYTE 768MB 8800GTX TD PCI E
 Chipset NVIDIA GeForce 8800GTX
 Memory 768MB, 384bits DDRIII
 Bus PCI-Express 16X
 Dual DVI, HDTV
\$929



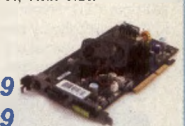
GIGABYTE 128MB X550 TD PCI E
 Chipset ATI Radeon X550
 Memory 128MB, 64bits DDR
 Bus PCI Express 16X
 TV out, DVI Port, Twin View
\$69



GIGABYTE 256MB X1950 Pro TD PCI E
 Chipset ATI Radeon X1950Pro
 Memory 256MB, 256bits DDRIII
 Bus PCI-Express 16x
 TV out, DVI Port, HDTV
\$289



XFx 7600GS TD AGP
 Chipset NVIDIA GeForce 7600GS
 Memory 256/512MB, 128bits DDRII
 Bus AGP 8X
 TV out, VGA and DVI, Twin View
 256MB \$179
 512MB \$219



XFx 256MB 7600GT TD AGP
 Chipset NVIDIA GeForce 7600GT
 Memory 256MB, 128bits DDRII
 Bus AGP 8X
 TV out, Dual DVI, Twin View
\$249



XFx 256MB 7600GT TD PCIE
 Chipset NVIDIA GeForce 7600GT
 Memory 256MB, 128bits DDRIII
 Bus PCI-Express 16x
 TV out, Dual DVI, Twin View
 Clock Speed: 570Mhz
\$189



XFx 256MB 7900GS TD PCIE
 Chipset NVIDIA GeForce 7900GS
 Memory 256MB, 256bits DDRIII
 Bus PCI-Express 16x
 TV out, Dual DVI, Twin View
 Clock Speed: 480Mhz
\$299



XFx 512MB 7950GT TD PCIE
 Chipset NVIDIA GeForce 7950GT
 Memory 512MB, 256bits DDRIII
 Bus PCI-Express 16x
 Video in & TV out, Dual DVI, Twin View
 Clock Speed: 610Mhz
\$449



XFx 640MB 8800GTS TD PCIE
 Chipset NVIDIA GeForce 8800GTS
 Memory 320/640MB, 320bits DDRIII
 Bus PCI-Express 16x
 Dual DVI, HDTV
 Clock Speed: 500Mhz
 320MB \$499
 640MB \$689



XFx 768MB 8800GTX TD PCIE
 Chipset NVIDIA GeForce 8800GTX
 Memory 768MB, 384bits DDRIII
 Bus PCI-Express 16x
 Dual DVI, HDTV
 Clock Speed: 575Mhz
\$929



POWERCOLOR 256MB X1950Pro AGP
 Chipset ATI Radeon X1950Pro
 Memory 256/512MB, 256bits DDRIII
 Bus AGP 8x
 TV out, Dual DVI, Twin View
\$329

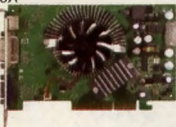


POWERCOLOR X1950Pro Extreme PCIE
 Chipset ATI Radeon X1950Pro
 Memory 256/512MB, 256bits DDRIII
 Bus PCI Express 16X
 Video in/TV out, Dual DVI, Twin View
 256MB \$309
 512MB \$369



Leadtek*256MB 7600GT TDH AGP

Chipset NVIDIA GeForce 7600GT
Memory 256MB, 128bits DDR3
Bus AGP 8X
Dual-Link DVI, HDTV



\$269

Leadtek*256MB 7600GT TDH PCI E

Chipset NVIDIA GeForce 7600GT
Memory 256MB, 128bits DDR3
Bus PCI Express 16x
Dual-Link DVI, HDTV



\$189

Leadtek*512MB 7950GT TDH Extreme PCI E

Chipset NVIDIA GeForce 7950 GT
Memory 512MB, 256bits DDRIII
Bus PCI Express 16X
Dual-Link DVI, HDTV



\$399

Leadtek*768MB 8800GTX TDH PCI E

Chipset NVIDIA GeForce 8800GTX
Memory 768MB, 384bits DDRIII
Bus PCI-Express 16x
Dual DVI, HDTV



\$929

Leadtek*128MB Quadro FX560 PCI E

Chipset NVIDIA Quadro FX 560
Memory 128MB, 128bits DDRIII
Bus PCI Express 16X
DVI-DL+DVI-SL+HDTV



\$399

Leadtek*256MB Quadro NVS440 PCI E

Chipset NVIDIA Quadro NVS440
Memory 256MB, DDRIII
Bus PCI Express 16X
Quad Head DVI



\$669

Leadtek* TV2000 XP

WinFast TV2000 XP is your best personal digital video recorder with video editing & authoring. It is the most effective way of turning your PC into a high definition TV and FM entertainment center.



RM \$49
Expert \$79

Leadtek*DTV Dongle

Portable DVB-T USB2.0 TV Box:

- Picture-In-Picture (PIP), POP, PAP
- Time-Shifting
- Capture format profile
- Scheduled Power-up Recording
- All-in-one Control Panel



\$99

Leadtek* DTV1000 T

Digital Video Broadcasting

Terrestrial TV Card:

- Picture-In-Picture (PIP), Picture-On-Picture (POP)
- Exclusive M.V.P mode
- Time-Shifting
- Powerful schedule
- Capture format profile
- All-in-one control panel



\$89

Leadtek* DTV2000 H

With winfast DTV2000 Hybrid PCI TV Tuner, You can watch analog or high quality digital TV, listen to FM radio or DVB-T radio and record videos on your PC!



\$109

Leadtek* DV2000

• Watch TV in Stereo/SAP & Listen to FM in Stereo

- Provides 3 1394 ports for DV camcorder and other 1394 devices
- Convert your DV and Home Videos to VCD/DVD Directly



\$99

Leadtek* PVR3000 Deluxe

WinFast PVR3000 Deluxe an enhanced PCI 3DY/C Hardware MPEG/III encoder TV card, allows you to enjoy live full-band antenna TV or cable TV programs on your PC.

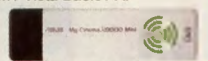


\$159

ASUS My Cinema

U3000Mini

- Watch and record digital TV programs (DVB-T free-to-air) on PC or notebook
- Time Shifting function for temporary leave
- Manually schedule recording
- One-touch recording from EPG
- Vista Premium / Vista Basic / XP / MCE supported



\$79

AVerMedia DVB-T A777

AVerTV DVB-T 777 is a digital terrestrial television receiver card that allows you to access free to air digital TV and radio signals using VHF/UHF antenna. It can be used to record and save TV programs directly to your PC s hard disk in original MPEG-2 format.



\$99

AVerMedia AVerTV Hybrid+FM

AveMedia AVerTV Hybrid + FM PCI or Cardbus, Watch Analog TV (PAL) or High Quality Digital Terrestrial TV (DVB-T) programs and FM Radio broadcasts on PC or Laptop.



PCI / Cardbus
\$119/119

AVerMedia AVerMedia TV

Hybrid + FM Volar

AVerMedia TV Hybrid + FM Volar, USB 2.0 Pen Drive, Watch TV on PC/Notebook, 75 Ohm Coaxial TV Antenna/Composite/S-Video/FM, Remote & FM Antenna



\$129

COMPRO TECHNOLOGY VideoMate T750

A dual PCI DVB-T and analog TV/FM tuner card, which brings HQ digital terrestrial TV and universal analog TV/FM broadcasts to your PC and turns it into a home entertainment center by bringing digital/analog TV viewing, video/audio capturing, and personal digital video recording capabilities.



\$139

Fusion Pro HDTV DVB-T Hybrid

- Watch both digital & analogue TV on a PC.
- Record TV Programs to HDD as DVD/ MPEG-2 Format.
- Scheduled recording from Stand-by mode.
- Pause and replay live TV shows.
- Low profile form factor for slim PC



\$169

Fusion Dual 2 Dual Digital

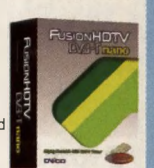
- Record TV to HDD, Scheduled recording & Time Shift.
- 2 Hi-Def Digital TV tuners, Low Profile PCI Card.
- Watch OneChannel While Recording Another.
- Full function MCE style infrared remote control.



\$219

Fusion Nano USB HDTV

- Highly Portable
- Supports any notebook as well as desktops
- Bus-powered
- Small form-factor and fancy design fits into your pocket
- High resolution, crystal clear picture quality
- Remote Control Included



\$129

Hauppauge! HVR-1100MCE

Digital HDTV

The Hauppauge HVR1100-MCE is specially designed for use and integration with MS Windows Media Centre. It provides sharp, clear viewing and capture of free-to-air digital SD and HD television*, FM radio or DVB-T radio.

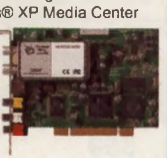


\$149

Hauppauge! HVR-1300MCE

Digital HDTV

Internal PCI digital or analogue TV receiver for Windows® XP Media Center Edition. Supports Australian Digital SD/HD TV Built-in hi-quality hardware MPEG encoder.



\$209

Hauppauge! WinTV-PVR-150 MCE I.p.

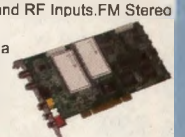
WinTV-PVR-150 MCE I.p. brings live TV, FM radio and TV recording to your low profile Media Center system, it also runs with third party applications like BeyondTV and SageTV, too!



\$159

Hauppauge! PVR-500MCE oem

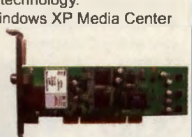
PCI Analogue Dual TV Tuner each with a Nicam Stereo Decoder. SVHS, Composite, Stereo RCA Audio and RF Inputs.FM Stereo Radio Receiver for Windows® XP Media Center Edition.



\$289

Hauppauge! Nova-T 500MCE PCI Dual Digital

- True single PCI slot / dual tuner solution.
- State-of-the-art technology.
- Designed for Windows XP Media Center Edition.



\$219

PINNACLE PCTV 310i

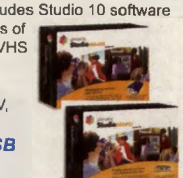
- Watch & record HDTV or analogue TV on your PC • Listen & Record FM Radio, DAB Digital Radio, Internet Radio • Timeshifting for pausing & replaying live TV • Record to MPEG-1, MPEG-2, or direct to DVD • Channel Name Recognition • Teletext



\$179

PINNACLE Studio500 V10

- Pinnacle Studio 10 with Internal PCI or External USB, Includes Studio 10 software
- Copy the contents of your Hi-8, VHS, SVHS to PC.
- Import MPEG-1, MPEG-2, AVI, WAV, MP3 Files.
- Int. PCI/Ext. USB



\$209/259

PINNACLE Studio Plus700

- Pinnacle Studio 10 PLUS with Internal PCI or External USB, Includes Studio 10PLUS editing software
- Copy contents of your Hi-8, VHS, SVHS to PC.
- Import MPEG-1, MPEG-2, AVI, WAV, MP3 Files.
- Int. PCI/Ext. USB



\$359/399

CREATIVE Audigy Value
The Upgrade Solution for Basic Motherboard Audio to High Quality 24-bit, 7.1 Audio. Delivering audio quality of up to 24-bit / 96KHz, 100dB SNR clarity and 7.1 surround sound, Sound Blaster Audigy Value is the ideal upgrade to high quality audio from basic motherboard audio.

\$55



CREATIVE Audigy4 7.1
Step up to high-quality audio and great gaming performance plus a convenient remote control. Whether you enjoy music, movies, games, or all three, Sound Blaster® Audigy® 4 has something for you.

\$109



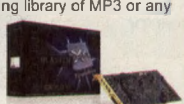
CREATIVE X-Fi Xtreme
Audio
• Restore the details and vibrance that your music lost during MP3 compression
• Enjoy all your music and movies in surround sound on virtually any speaker system or headphones

\$129



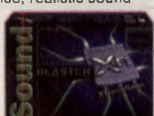
CREATIVE X-Fi Xtreme
Music
The Sound Blaster X-Fi XtremeMusic sound card harnesses the full power of the Creative X-Fi Xtreme Fidelity audio processor to Upgrade any existing library of MP3 or any music files to the Xtreme Fidelity audio standard.

\$169



CREATIVE X-Fi Xtreme
Gamer
The Sound Blaster® X-Fi™ XtremeGamer sound card delivers faster audio performance and intense, realistic sound in all your games. Headphone surround sound is better too.

\$209



CREATIVE X-Fi Platinum
Sound Blaster X-Fi Platinum promises a sensory delight for your ears. Versatile enough for home digital entertainment, X-Fi Platinum is also ideal for all your audio creation needs. You can choose from: Entertainment, Audio Creation & Gaming Mode.

\$259



CREATIVE X-Fi Fatal1ty
Designed to meet the performance demands of the world's best-known professional gamer, the Sound Blaster X-Fi Fatal1ty™ FPS sound card provides stunning 109dB SNR audio quality, accelerates gaming performance and includes 64MB of on-board X-RAM for high performance gaming.

\$399



CREATIVE X-Fi Elite Pro
Sound Blaster® X-Fi™ Elite Pro is the "top of the line" answer to those looking for the very best in audio creation and home entertainment - with all the power and features of the entire Creative Sound Blaster X-Fi family of sound cards bundled into one ultimate solution!

\$639



ALTEC LANSING VS2220
Altec Lansing VS2220 Features:
• High-Quality Stereo
• Built-in Controls
• Distinctive Styling
• Headphone Jack
• Shielded Satellites

\$49



ALTEC LANSING VS2221
Altec Lansing VS2221 Features:
• High-Quality Stereo, Quality Bass
• SFX & Sound Field Xpander Technology
• Wall-mountable speakers
• Built-in Controls
• Headphone Jack
• Shielded Satellites

\$75



ALTEC LANSING VS2321
Altec Lansing VS2321 2.1 piece flat panel speaker system, Xdb technology, SFX technology, Headphone Jack, new modern stylish design, pure rich sound, second to none in quality, style & performance.

\$89



ALTEC LANSING FX6021
Featuring two ultra-slim satellites with a total of 12 one-inch neodymium full-range micro drivers, LaserSound technology enables the system to deliver crisp, clean, full-volume sound.

\$249



ALTEC LANSING MX5020
The Ultimate Speaker System from Altec Lansing
• Not only looks great, but sounds amazing
• Featuring a polished, piano-quality black finish
• Accurate, clear and crisp sound

\$119



ALTEC LANSING MX5021
Featuring a polished, piano-quality black finish, MX5021 delivers big time in a powered audio system that not only sounds great - but looks terrific. Wireless Remote Control Pod-Control of bass, treble and master volume levels is at your fingertips.

\$179



CREATIVE Inspire 2500
Pumping out 60-Watts System Power, this extraordinary subwoofer speaker system is perfect for listening to music and gaming on your PC.

\$49



CREATIVE Inspire 5200
Taking advantage of a front center speaker, This 5.1 system provides the most immersive PC entertainment with direct, in-your-face action in EAX® and DirectSound® 3D games and DVD movies.

\$79



CREATIVE Inspire M5300
Creative Inspire® M5300 speaker system is designed to complement any room, 5.1 add-in or built-in sound card. Great power, Awesome realism: Distinctive design, Tiny footprint; Fingertip control.

\$109



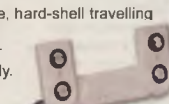
CREATIVE Inspire T6060
Unparalleled Style and Power for Exhilarating 5.1 Games and Movies, Creative Inspire T6060 has: Two-way satellite speaker design; Wood subwoofer; Powerful center speaker; Flared port; Small footprint; Wired remote control

\$149



Logitech MM22
Logitech's mm22 Portable Speakers are the perfect travel companion for your iPod or MP3 player. These high performance speakers utilize matching twin micro drivers for excellent audio. A deluxe, hard-shell travelling case holds your cables, AC adapter and speakers neatly.

\$59



Logitech MM50
Logitech mm50 Portable Speakers for iPod uses 3" pressure drivers to maximize bass and minimize distortion. The rechargeable Li-ion batteries last up to 10 hours, and you can charge both the speaker system and iPod battery simultaneously.

\$149



Logitech R20
The Logitech R-20 2.1 speakers enhance your games, movies, and music. They offer dynamic audio in a sleek, compact design. Their ported wood subwoofer displaces more air for deep bass.

\$39



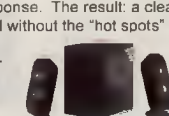
Logitech X140
Logitech's X-140 stereo speakers feature dynamic, real-time bass equalisation to maximise low frequency response while minimising distortion.

\$49



Logitech X-230
The high-tech subwoofer adjusts itself dynamically to deliver distortion-free bass. And the two all mountable satellite speakers eliminate the uneven sound response. The result: a clear, uniform sound field without the "hot spots" and inconsistency of other dual-driver satellites.

\$59



Logitech X530
The high-tech subwoofer adjusts itself dynamically to deliver distortion-free bass. And five wall-mountable satellite speakers use Logitech's patented FDD2™ technology to eliminate the uneven sound response.

\$89



Logitech V20
The Logitech® V20 USB Notebook Speakers offer a convenient, high-quality speaker system for your laptop with rich, full sound and deep bass—all in a lightweight, portable design.

\$69



Logitech Z4
The Z-4 features a modern audio inspired design with high-gloss and durable cast metal finish. Award-winning pressure driver subwoofer technology delivers unparalleled distortion-free bass and the sleek satellites feature one active and two pressure drivers

\$119



Logitech Z5500D
For the ultimate entertainment experience: Logitech's THX-certified, 500 watt Z-5500 Digital 5.1 speaker system delivers high-fidelity digital sound for DVD players, PCs, video game consoles, and more.

\$419



Logitech Z5450D
Logitech Z-5450D Wireless Speakers, the Digital Sound-Touch™ Control Centre, supports Dolby® Digital and DTS® soundtracks and includes digital and analogue inputs for connecting DVD players, PCs, video game consoles, MP3 players, and more.

\$389



Logitech Quick-Cam Messenger

- Add live video to MSN® Messenger
- Capture sound with the built-in microphone
- E-mail videos and photos easily
- Broadcast live video, email video and photos, and create web albums

\$39



Logitech Quick-Cam IM

- Send real-time video to anyone on your IM list... no camera necessary on receiving end
- Make live video calls to stay connected to long distance friends and family
- Capture videos and photos and e-mail them in one click
- bonus headset

\$59



Logitech® Quick-Cam® Notebooks

A compact, portable, full-color web camera that's perfect for students, mobile professionals and anyone who wants to stay in touch while on the road. It fits snugly to any notebook computer and does everything you'd expect a webcam to do.

\$59



Logitech QuickCam Notebooks Pro

- Video capture: Up to 640 x 480 pixels
- Still image capture: Up to 1280 x 960 pixels, 1.3 megapixels
- Frame rate: Up to 30 frames per second
- Integrated Notebook mount
- H-quality VGA CCD sensor
- Built-in microphone

\$129



Logitech QuickCam Chat

- Quality sound
- Bonus imaging editing software included
- Mounts easily with the included universal monitor clip
- Works with the most popular instant messaging applications

\$49



Logitech QuickCam Communicate STX

Logitech QuickCam Communicate, 640 x 480 Video resolution, still image capture at 1.3 Megapixels, Microphone for clear audio and flat-panel clip.

\$69



Logitech Quick-Cam Pro 5000

Designed to provide a more personal communication experience, Quick-Cam Pro 5000's exclusive technologies ensure sharp video and clear audio. Digital Zoom • Flat Panel Clip Included • Headset Included • Intelligent Face-Tracking • Microphone • PC • USB

\$109



Logitech QuickCam Fusion

Logitech QuickCam Fusion provides true 1.3 megapixel sensor quality with Logitech RightLight™ Technology combined with a high quality built-in microphone and Acoustic Echo Cancellation (AEC) and noise reduction technology for outstanding hands free/headset free video calling performance.

\$129



Logitech QuickCam Sphere

- Easily add live video to MSN Messenger with fast video 320 x 240 image size
- Works with video-enabled Yahoo/Windows Messenger
- Make live video calls using the built-in microphone
- Always stay in the frame
- Record high quality videos at true 640 x 480 resolution
- Capture 1.3MP photos

\$169



Logitech Quick-Cam Ultra Vision

Unsurpassed image quality, with an extra large glass lens. QuickCam® Ultra Vision uses Logitech RightLight™2 Technology to give you the highest quality image regardless of your lighting, and RightSound™ for clear, echo-free audio. It's video calling that truly is true-to-life.

\$179



Microsoft® Lifecam Platinum NX-6000 USB

- High Definition 2.0 Megapixel Video
- High Definition 7.6 Megapixel Still Photos
- Built-in Microphone
- Wide-angle Lens
- 3X Digital Zoom
- Optimized for Windows Live Messenger

\$139



CREATIVE WebCam Live! Motion

Creative WebCam Live! Motion, the ultimate wide angle webcam, MaxView™ automatic pan and tilt offers an amazingly wide 200° horizontal and 105° vertical view. It can also follow multiple subjects around, zoom in or sweep out for a wide shot - all in sleek silence.

\$179



ALTEC LANSING AHS322 Headset

- High-volume, premium 32 mm neodymium ear-phones deliver powerful, rich sound
- Noise canceling microphone helps eliminate background noise
- Soft foam ear-pads
- Gold-plated 3.5 mm connectors
- Handy in-line volume and microphone volume controller

\$29



ALTEC LANSING AHS302 USB Headset

- Stereo Headset with Microphone
- Dual USB • Analog connection
- Quality 36 mm neodymium ear-phones deliver a full, rich sound
- Discreet, contoured, behind-the-neck headband with leatherette ear-pads
- Noise canceling

\$69



PLANTRONICS Audio 350

- Plantronics Audio 350 Headphone Features:
- 40 mm speakers convey rich, resonant stereo with maximum bass response
- Lightweight • Noise-canceling microphone boosts speech recognition accuracy
- QuickAdjust® telescoping, bendable boom assures ideal placement
- Boom stows discreetly when not in use

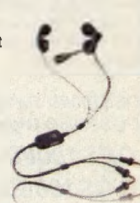
\$39



PLANTRONICS Audio 450

- Plantronics Audio 450 Headphone Features:
- Feather-light earbuds deliver full-range stereo sound
- Flex Grip® design provides unshakable fit
- Noise-canceling microphone cuts through background clamor

\$49



PLANTRONICS Audio 360

- Plantronics Audio 350 Headphone Features:
- Amply cushioned earpads provide maximum comfort
- Closed-ear design delivers total game immersion
- Noise-canceling mic cuts through background clamor
- 40mm speakers dish up maximum bass response

\$59



PLANTRONICS Audio 500

- Plantronics Audio 500 Headphone Features:
- Noise-canceling mic cuts through background clamor
- Soft, swivel-mounted ear cushions ensure hours of comfort
- QuickAdjust™ boom assures ideal microphone placement
- Lightweight, flexible headband

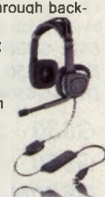
\$69



PLANTRONICS Audio 510

- Plantronics Audio 510 Headphone Features:
- Lightweight, flexible headband
- Noise-canceling mic cuts through background clamor
- Swivel-mounted, pillow-soft ear cushions deliver soft, acoustic precision
- 40mm stereo speakers dish up maximum bass response

\$79



PLANTRONICS Audio 550

- Plantronics Audio 550 Headphone Features:
- Lightweight, flexible headband
- Noise-canceling mic cuts through background clamor
- Swivel-mounted, pillow-soft ear cushions deliver soft, acoustic precision
- 40mm stereo speakers dish up maximum bass response
- PerSono™ Software

\$109



Logitech Mobile Express Headset

- Talk for up to 4 hours! Also enjoy 250 hours of stand-by time.
- Put it in your pocket. It's super lightweight.
- Enjoy advanced calling features.
- Adjust your volume or mute your call easily
- Enjoy freedom from cords. • Use it with either ear.

\$59



Logitech Premium USB Headset

Logitech's Premium USB Headset provides superior audio quality and simple plug and play operation. Its noise-canceling microphone filters out unwanted background noise. The soft touch in-line volume and mute control is convenient.

\$59



Logitech Mobile Traveller

- Logitech mobile traveller headset: Compact sophistication, great cordless clarity. Talk in style with ultra-compact, cordless headset; make calls even in windy conditions. Features: Multifunction Button • Bluetooth® Cordless • WindStop™ Microphone

\$79



ZALMAN ZM-RS6F+M Headphone

Enhanced spatial and realistic effects by separating front, rear, and center speakers. Easy setup of real surround-sound by connecting the front, rear, center jacks to the 5 channel (or more) sound card in your PC. Real Surround Sound field comparable to a complete multi-channel speaker system.

\$69

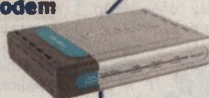


Computer 2
wirelessly connected to
router using **DWL-G630**
Cardbus adapter



\$39

DSL-502T
ADSL Modem
\$69



dlink.com.au
Internet

Computer 1
with Ethernet connection
to **DI-524** Router



DI-524
Wireless Router
\$69



Computer 3
wirelessly connected to
router using **DWL-G510**
PCI adapter



\$39

DSM-320 \$289
Wireless Media Player



\$109
Console
Xbox or PS2 with
DWL-G810



Entertainment System

D-Link 8ports Switch

D-Link 8-Port 100 or Gigabit Auto-Negotiating Switch, Half-/Full-Duplex, IEEE 802.3x Flow Control, Auto-Polarity Correction, Expansion via MDI Uplink Port, Small & Portable in Size



DES1008D 10/100
DGS1008D Gigabit
DES1008D \$59
DGS1008D \$99

D-Link 4 / 7port Router

DI-704P / 704UP / 707P
• Integrated Firewall
• Shares your Broadband & your printer
• Works with any Ethernet Cable / DSL
• Built in Telstra Cable client
• 4 or 7 10/100 Ethernet ports



704P \$69
704UP \$89
707P \$109

D-Link Wireless GamingRouter DGL-4300

• Optimized Gaming Experience with GameFuel Technology
• Up to 108Mbps* 802.11g Wireless
• 4 Gigabit Ethernet Ports
• Customizable Settings for Games and Applications



\$219

D-Link Wireless Access Point

• 802.11g wireless LAN standard
• 54 or 108Mbps data rate
• Compatible with 802.11b/+ standards
• DHCP client/server
• User-selectable WEP data encryption
G700ap \$79
G710ap \$119
G730ap \$89
2100ap \$159



D-Link Wireless PCI

• Fully 802.11b standard compatible
• 256-bit WEP encryption provides you a higher level of security
DWL-G510 11/54mbps
DWL-G520 11/54/108mbps
DWL-G520M 11/54/108mbps mimo



G510 \$39
G520 \$59
G520M \$75

15x

D-Link Wireless PCMCIA

• 802.11g wireless LAN standard
• 32-bit CardBus performance
• Stronger network security with 64/128/256-bit WEP data encryption
DWL-G630 11/54mbps
DWL-G650 11/54/108mbps
DWL-G650M 11/54/108mbps mimo



G630 \$39
G650 \$59
G650M \$75

15x

D-Link ADSL Router DSL-502T / DSL-504T

• Plug & Play USB/Fast Ethernet Connectivity
• Secure NAT/DHCP Functions
• Telstra Approved
• Supports all major ISP'S
502T 2port
504T 4port



502T \$69
504T \$79

D-Link ADSL Router DSL-G604T Wireless

• 4 Port fast Ethernet & 802.11g wireless connectivity
• Supports WPA Security
• Secure NAT/DHCP Functions
• Telstra Approved
• Supports all major ISP'S



\$119

D-Link Wireless Lan USB Key

• Up to 108Mbps
• 802.11g, 802.11b Compatible



DWL-G122 11/54mbps
DWL-G132 54/108mbps

DWL-G122 \$49
DWL-G132 \$69



15x

D-Link Wireless Router

• Up to 108Mbps
• Advanced Firewall & Parental Control
DI-524 11/54mbps
DI-624 11/54/108mbps
DI-624S 108mbps
DI-634M 108mbps with mimo



DI-524 \$69
DI-624 \$109
DI-624S \$149
DI-634M \$119

D-Link DI-824VUP+ VPN Router

• Broadband Internet sharing
• Robust VPN firewall security
• Print server and built-in 4-port switch



\$209

D-Link DP-G310/G321 Wireless Printer Server

High Speed 802.11g Wireless Printer Server
• Supports USB 2.0
• 802.11g Standard, 802.11b Compatible
• Easy Web-based Set up and Configuration
G310 1 x USB
G321 2xUSB, 1xPAR



G310 \$169
G321 \$209

54x

LINKSYS Wireless PCI
16LWMP54G/54GR/54GX
 • 802.11g connectivity for your desktop PC
 • Data rates up to 54Mbps or 108Mbps
 • Interoperates with 802.11b networks
54G 11/54mbps
54GS 11/54/108mbps
54GX Range Expand:
WMP54G \$59
WMP54GR \$109
WMP54GX \$139



LINKSYS Wireless PCMCIA
16LWPC54G/54GR/54GX
 • 802.11g networking for your notebook
 • Data rates up to 54Mbps or 108Mbps
 • Interoperates with 802.11b (11mbps)
 • Advanced wireless security: WPA and up to 128-bit encryption
WPC54G \$59
WPC54GR \$109
WPC54GX \$139



LINKSYS Wireless Router
WRT54G / 54GL / 54GR
 • 802.11g Access Point
 • Data rates up to 54Mbps or 108Mbps
 • Interoperable with Wireless-B devices
 • Advanced security: WPA, wireless MAC address filtering, powerful SPI firewall
WRT54G \$99
WRT54GL \$109
WRT54GR \$139



LINKSYS WAG54G
ADSL / Router
 • Built-in Router and 4-port Switch to share the Internet
 • Built-in Wireless-G (802.11g) Access Point also lets you connect without running wires
 • Advanced firewall and security features
\$129



BILLION 7402LM
ADSL2+ Modem/Router with 4-port Switch
 • High-speed Internet Access with ADSL2+ up to 24Mbps
 • SOHO Firewall Security with DoS Prevention and SPI
 • Parental Control with URL Blocking and Packet Filtering
\$159



BILLION 7402R2M ADSL
VPN Modem / Router
 • VPN with 3DES is up to 3.5 Mbps
 • SOHO Firewall Security with DoS Prevention and SPI
 • Parental Control with URL Blocking and Packet Filtering
 • High-speed Internet Access with ADSL up to 8Mbps
\$179



NetComm NB5 ADSL-2
Modem Router
 • Supports ADSL and ADSL-2
 • Advanced SPI Firewall
 • VPN pass-through
 • USB and Ethernet ports
 • Universal Plug & Play (UPnP)
 • Quality of Service (QoS)
 • Video Tutorials
\$69



NetComm NB5 Plus4/4W
ADSL2 Modem Router
 • Netcomm ADSL2+ Ethernet Modem/Router
 • Ethernet Connection
 • NAT Firewall Protection
 • DHCP Support
NB5 Plus4W: Wireless
NB5 Plus4 \$95
NB5 Plus4W \$125



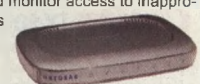
NETGEAR Gigabit Switch GS105/ 108/ 116
 • 10/100/1000 Mbps Ethernet ports
 • High-speed, auto-sensing, full-duplex connections
 • Supports PC or Macintosh® O/S
 • Silent operation for a peaceful work environment
5/ 8/ 16port
\$99/139/339



NETGEAR Rackmount Switch JFS516 / JFS524
 • 16 / 24ports 10/100 Rackmount Switch
 • Plug and Play
 • Auto-detects speed and duplex
 • Auto Uplink™ Technology makes the right connection
 • Rack mount kit included
16 / 24port
\$99/149



NETGEAR RP614
4Port Router
 • Lightning fast cable/DSL Internet sharing with integrated 4-port switch
 • NAT Firewall with VPN pass-through protects against hackers
 • Connects up to 253 network users. Parents may restrict and monitor access to inappropriate Web sites
\$69



NETGEAR Access Point
 • High Speed 54 or 108 Mbps Wireless
 • Supports Wireless Bridging and Repeater
 • Supports WPA-PSK for Better Wireless Security
WG602 \$89
WG102 \$169
WPN802 \$159



NETGEAR Print Server PS101 / PS121
 • Mini printer server 1port parallel or USB
 • Share a printer without sharing your PC
 • Handles multiple print jobs concurrently
 • Easy, Web-based remote management
PS101 Parallel
PS121 USB
PS101 \$99
PS121 \$119



NETGEAR USB2 Key WG111/WG111T/WPN111
 • 54, 108 Mbps or RangeMax standard 802.11g wireless
 • Works with all standard 802.11b/g wireless routers and access points
 • Compact, pocket-sized design
WG111 \$39
WG111T \$59
WPN111 \$79



NETGEAR Wireless PCI
 • Up to 108 Mbps to your desktop PC
 • 128-bit WEP encryption, upgradeable to Wi-Fi Protected Access (WPA)
 • 802.11g standard compliance; interoperable with existing 802.11b/g networks
WG311 11/54mbps
WG311T 11/54/108mbps
WPN311 Rangemax
WG311 \$39
WG311T \$49
WPN311 \$69



NETGEAR Wireless PCMCIA
 • Transfer up to 108Mbps to the notebook
 • 128-bit WEP encryption, upgradeable to Wi-Fi Protected Access (WPA)
WG511 11/54mbps
WG511T 11/54/108mbps
WPN511 RangeMax
WG511 \$39
WG511T \$49
WPN511 \$69



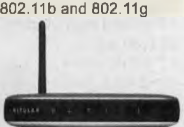
NETGEAR SC101
Storage Central
 • Share your valuable files or keep them private with password protection
 • Protect and duplicate your valuable files, automatically
 • Supports IDE drives from 80GB to 800GB or more
\$139



NETGEAR WGR614
Wireless Router
 • Up to 54 Mbps in 2.4 GHz mode
 • Share your Cable/DSL Internet connection with or without wires!
 • Automatically detects and connects to your ISP
 • True Firewall with SPI and NAT
\$69



NETGEAR Wireless Router WGT624
 • 108 Mbps or XR Range Wireless
 • Over 10 security & privacy features including Double Firewall (SPI & NAT)
 • 802.11g standard compliance; interoperable with existing 802.11b and 802.11g networks
\$89



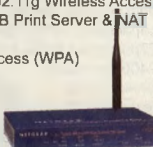
NETGEAR Wireless Router WPN824
 • Up to 1000% more wireless coverage and speed than 802.11g
 • RangeMax™ Smart MIMO
 • 7 Internal Smart Antennas adapt on the fly to interference
 • SmartWizard™ Installation Assistant
\$119



NETGEAR Wireless Router WNR834B
 Netgear RangeMax Next Wireless Router – up to 270Mbps wireless networking
 • Simple and secure way to share your high-speed Internet connection throughout the home • Easy set-up
 • Maximum performance requires use of RangeMax NEXT Wireless-N adapters
\$189



NETGEAR FWG114P
Router
 • True Firewall with SPI & Intrusion Detection protection
 • Built-in 54 Mbps/802.11g Wireless Access Point, Integrated USB Print Server & NAT Routing
 • Wi-Fi Protected Access (WPA)
\$169



NETGEAR ADSL Router DG834/ 834G/ 834GT
 • Combines modem, router, switch, 802.11g access point, and SPI True Firewall
 • Up to 5X or 10X faster than 802.11b
 • True Firewall with SPI & DoS, VPN pass-through
 • Smart Wizard detects/connects to your ISP
DG834/834G/834GT
\$89/119/189



NETGEAR ADSL Wireless Router DG834PN
 108Mbps RangeMax ADSL Router:
 • Up to 500% greater coverage and speed than 802.11g
 • Smart MIMO technology with 6 Internal Antennas
 • Auto-adjusts to avoid interference on the fly
\$199



brother MFC-665CW

Brother MFC-665CW, Colour Inkjet - Flatbed Digital 9 in 1 Multi-Function Centre: Colour Inkjet Printer, Colour Fax, Flatbed Digital Copier, Flatbed Colour Scanner, Photo-Capture Centre, PC-Fax, Speaker Phone, Telephone Hand-set, Answering Machine



\$279

brother MFC-5860CN

MFC-5860CN - 6 in 1 Flatbed Digital Multi-Function Centre is a Colour Inkjet Printer, Colour Fax, Flatbed Digital Copier, Flatbed Colour Scanner, PhotoCapture Centre, PC-Fax, with Up to 35 sheets ADF, 33,600bps (Fax) Modem, Up to 30 ppm Mono, Up to 25ppm Colour.



\$269

brother MFC-7420

The MFC-7420 5-in-1 Laser Multi-Function Centre features a 14.4Kbps fax, 20 pages per minute (ppm) laser printer, and up to 20 copies per-minute convenience copier which combines performance, connectivity and reliability.



\$399

brother HL-2070 Laser

Brother HL-2070N Workgroup personal laser printer, a quality entry-level 20ppm mono laser printer for the Windows or MAC user which offers a 600 x 2400 dpi print resolution and is network ready.



\$259

brother HL-5250DN

Workgroup Laser Printer

Brother HL-5250DN features excellent paper handling with its built-in duplex capability for two-sided printing and very expandable paper input capacity.



\$409

brother HL-2700CN

A4 Network Color Laser

- Up to 31 ppm Mono (A4) and 8 ppm Colour (A4) printing speed
- 2400dpi resolution
- 64 MB Memory
- IEEE 1284 Parallel, 10/100BaseTX Ethernet & Hi-Speed USB 2.0



\$749

Canon LBP3000

- 14 pages per minute with instant warm up
- 600 dpi and microfine toner enhance photos and graphics
- Prints on paper, transparencies, labels and envelopes
- All-in-one cartridge



\$139

Canon LBP5200

- Machine Type: Colour laser printer
- Up to 19 ppm Black & 4 ppm Colour, A4
- Resolution: 600 x 600 dpi (max 9600 x 600 dpi equivalent)
- First Print Out Time: Black: 18 seconds, colour: 27 seconds
- Memory: 8MB



\$399

Canon PIXMA iP3300

- Print Resolution: Up to 4800 x 1200 dpi
- Mono Print Speed: Up to 25ppm (Max.), Colour: Up to 17ppm (Max.)
- 4 separate ink tanks
- Media Input: Sheet Feeder: Approx. 150 sheets Front Feeder: Approx. 100 sheets



\$99

Canon PIXMA iP4300

- Print Resolution: Up to 9600 x 2400 dpi
- Print Engine: InkJet 5-ink
- Print Speed: Black: Up to 30 ppm, Color: Up to 24 ppm
- Standard DVD/CD Printing, Duplex Printing
- direct digital camera printing



\$159

Canon PIXMA iP5300

- Print Resolution: Up to 9600 x 2400 dpi
- Print Engine: InkJet 5-ink
- Print Speed: Black: Up to 31 ppm, Color: Up to 24 ppm
- DVD/CD Printing, Two Sided Printing
- direct digital camera printing
- Built-in automatic duplex



\$199 unit

Canon PIXMA iP6700D

- LCD Screen: 3.5" (8.9cm) colour LCD, 76,800 pixels and operation panel
- Print Resolution: Up to 9600 x 2400 dpi
- Mono/Color Print Speed: Up to 18/17ppm
- 6 separate ink tanks
- Two Sided Printing
- Interface: USB 2.0 Hi-Speed, Bluetooth



\$279

Canon IX4000 A3

- Fast A4 document printing at up to 18 ppm black and 14 ppm colour.
- Print photos with approx. 166 secs. for an A3+ (11"x14" image on 13"x19" photo paper)
- maximum 4800 x 1200 dpi for high-quality photos and documents
- Print borderless photos up to A3+
- 4 individual ink tanks



\$489

Canon IX5000 A3

- Fast A4 document printing at up to 25 ppm black and 17 ppm colour
- Print photos with 166 secs. for an A3+ (11"x14" image on 13"x19" photo paper)
- maximum 4800 x 1200 dpi for high-quality photos and document
- Print borderless photos up to A3+
- 4 individual ink tank



\$639

Canon Pro9000 A3+

- Resolution: 4800 x 2400 dpi
- Print Speed: Monochrome: approx. 16 ppm, Colour graphics: 15ppm, Photo Paper Pro: approx. 83 seconds
- Paper Size: A3+, A3, A4, A5, B5, B4, LDR+, LDR, Letter, Legal, Envelopes (DL, Com. #10), 5" x 7", 6" x 4"



\$899

Canon MP180

- Photo quality: max. 4800x1200dpi
- Click-Connect-Print
- Print from compatible memory cards
- Copy/scan thick original
- Smart Copying
- Long lasting photos



\$89

Canon MP460

- Precision ink nozzles create high resolution photos—up to 4800 x 1200 colour dpi.
- 1.9" colour LCD display
- Print from compatible memory cards
- Print wirelessly
- High-quality scans
- Smart copying



\$129

Canon MP510

- Print directly from compatible digital cameras, memory cards or mobile phones
- huge 1.9 inch colour LCD screen
- high-definition at up to 4800 x 1200 dpi
- Print and copy at up to 25 ppm black and 17 ppm colour
- 4 individual ink system



\$159

Canon MP530

- Print up to 29ppm black and 19ppm colour
- High-speed 6" x 4" photo prints in approx. 51 seconds
- 9600 x 2400 dpi print resolution for outstanding photos and documents
- High-speed fax allows storage of up to 150 incoming pages
- 2-Way Paper Feed



\$319

Canon Canon MP830

- All-in-One colour print, fax, copy & scan
- Print up to 30ppm mono, 24ppm colour
- Super G3 Fax
- 35-page auto duplex ADF
- Two paper trays, Duplex & DVD/CD print
- Max.9600x2400dpi printing
- 2400dpi scanning
- Direct photo printing



\$429

Canon MP810

- Functions: Print, Scan, Copy, Camera, Memory Card, 35mm film/slide and Mobile phone direct printing, 3" TFT Display
- Print Engine: InkJet 5-ink
- DVD/CD & Duplex Printing
- Scanner: Flatbed CCD colour scanner



\$359

Canon MP960

- All-in-One Photo Printer with 3.5" TFT Display and Easy-Scroll wheel.
- Print and copy at up to 30 ppm black and 22 ppm colour
- 7 individual ink tanks for 6 colour photo printing
- Includes Film Adaptor Unit



\$479

Canon MF4140

Canon MF4140 Laser Printer, Fax, Scanner, Digital Copier Multifunction:

- Laser copy quality (20cpm, 600 x 600 dpi)
- High print resolution (20 ppm/1, 600x600 dpi) • 32MB SDRAM
- CD scanning at 1200 x 2400 dpi
- fax memory of up to 250 pages



\$329

Canon MF4150

Canon MF4150, Laser printer, Fax, Scanner, and Digital Copier all-in-one:

- Laser copy quality (20cpm, 600 x 600 dpi)
- High print resolution (20 ppm/1, 600x600 dpi) • 64MB SDRAM
- CD scanning at 1200 x 2400 dpi
- fax memory of up to 250 pages



\$429

EPSON CX3900

- 4 Colour Multifunction Inkjet Printer
- Print Speed: 23ppm (black), 12ppm (colour)
- Print Resolution: 5760 Optimised dpi
- Scan Speed: Mono up to 5m sec & Colour up to 15m sec / line at 600dpi • Copy Speed: Black text memo (A4) Approx 5.3 sec



\$89

EPSON CX5900

- 4 Individual Ink Cartridges, 2" LCD
- Print Speed: 27ppm (black), 27ppm (colour)
- Print Resolution: 5760 Optimised dpi
- Scan Speed: Mono up to 5m sec & Colour up to 15m sec / line at 600dpi
- Copy Speed: Black text memo (A4): Approx 27 cpm



\$159

EPSON CX6900F

4 Colour Multifunction Inkjet Printer, a powerful and versatile fax, copy, scan and print solution with robust photographic capabilities.

- Print Speed: 27ppm (black), 27ppm (colour) • Scan Resolution: 1200 x 2400 dpi • Copy Speed: Black text memo (A4) approx 27 cpm



\$249

EPSON AcuLaser C1100 / C1100N

- Resolution is up to 2400dpi
- 25ppm for mono & 5ppm for colour A4
- 250 sheets (face down tray)
- 32MB with EPSON MiTech
- C1100N: Networking



\$399/529

EPSON R250

- 4 individual colour ink cartridges
- Up to 20 or 19ppm in black or colour A4 text & 47sec per photo in printing
- High resolution 5760 x 1440dpi Optimised
- True BorderFree photo printing up to A4
- PC - Free Photo Printing Flexibility



\$109

EPSON R390

- Epson R390 A4 Photo printer:
- Print Resolution : 5760 Optimised dpi
- Print Speed : 30ppm black & colour
- 6 individual colour ink cartridges



\$249

EPSON R800

- New UltraChrome Hi-Gloss™ pigment inks
- Up to 17ppm for black text A4 printing
- Print directly on printable CD-R / DVD-Rs
- 5760 Optimized dpi
- 8 individual cartridges



\$479

EPSON R1800

- True A3+ BorderFree Printing
- 8 Individual Colour Ink Cartridges
- High Quality Photographic Printing with 5760x1440 Optimised DPI
- UltraChrome Hi-Gloss™ Ink
- CD & DVD Printing



\$899

EPSON RX530

- Printer, Scanner and Copier
- Up to 5760 Optimised dpi printing
- Up to 20ppm in black & 19ppm in colour printing
- Copy speed At 300dpi: Colour 6msec/line Monochrome 2msec/Line
- Copy speed: Approx 18cpm *1 - A4 black



\$209

EPSON RX650

- 6 Color Multifunction: Printer, Copier, Scanner and Photo features
- Print speeds of up to 21ppm in black and colour text
- Print directly from a wide range of digital camera memory cards
- 2.5" Photo fine LCD



\$399

Laserjet 1020/1022

- Print: Up to 15 or 19ppm (letter) / 14 or 18 ppm (A4) black
- up to 1200 dpi effective output quality black
- up to 5,000 or 8,000 pages per month duty cycle



1020 \$179
1022 \$239
1022N \$409

Laserjet P2015/2015N

- Prints Up to 26 ppm
- Up to 1200 x 1200 dpi resolution
- up to 15,000 pages per month duty cycle, 32MB expandable to 288MB RAM



2015N:
Networking
2015 \$459
2015N \$599

CLJ 1600

- HP CLJet 1600 Printer-Print: Up to 8 ppm black & up to 8 ppm colour; Up to 600 x 600 dpi black & up to 600 x 600 dpi colour; Up to 20,000 pages per month duty cycle; 16MB; Hi-Speed USB 2.0 port



\$359

CLJ 2605

- HP CLJ2605, 12ppm black, 10ppm color (A4), first page out - 20 seconds, 300MHz processor, HP ImageREt 2400, 64MB up to 320MB, PCL 6 & Postscript level 3 emulation, input: priority feed tray & 250 sheet tray, 35,000 duty cycle



2605 \$479
2605DTN \$899

CLJ2600N

- 600 x 600 dpi with HP ImageREt 2400
- Print speed: 8 ppm, color and black
- Duty Cycle: Up to 35,000 pages per month
- 16MB Memory
- Network Ready



\$499

LJM1005

- Laser Print, colour scan, digital copy; M1005 MFP, Print/Copy: Up to 15ppm/cpm letter & 14ppm/cpm A4, 150 sheet input tray & 10 sheet priority feed slot, 32MB RAM, Hi-Speed USB 2.0 port, Scan: up to 1200x1200dpi 24 bit colour (up to 19,200 dpi enhanced)



\$309

Laserjet 3050

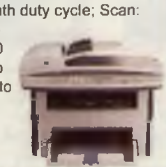
- Print: Up to 19 ppm Letter / 18 ppm A4 black; Up to 1200 x 1200 dpi black; Up to 7000 pages per month duty cycle; Scan: Up to 19,200 dpi enhanced & up to 600 dpi optical; Copy: Up to 19 ppm letter (up to 18 ppm A4)



\$399

Laserjet 3052

- Print: Up to 19 ppm Letter / 18 ppm A4 black; Up to 1200 x 1200 dpi black; Up to 7000 pages per month duty cycle; Scan: Up to 19,200 dpi enhanced & up to 1200 dpi optical; Copy: Up to 19 ppm letter (up to 18 ppm A4)



\$479

Laserjet 3055

- Print: Up to 19 ppm Letter / 18 ppm A4 black; Up to 1200 x 1200 dpi black; Up to 7000 pages per month duty cycle; Scan: Up to 19,200 dpi enhanced & up to 1200 dpi optical; Copy: Up to 19 ppm letter (up to 18 ppm A4)



\$599

PSC 5180/6180

- Printer/Fax/Scanner/Copier
- Print 32ppm black & 31ppm color; Scan: 4800x4800dpi optical, Fax: 3 secs/page at 33.6kbps, USB & PictBridge, 3000 pages/month, 2.5" or 3.6" LCD



6180: Wireless
\$269/379

Deskjet 1280 A3

- A3+ inkjet with print speed of up to 14 ppm black/11 ppm colour in draft mode, Photorel III or 4800 x 1200-optimised dpi colour, 5,000 pages per month duty cycle, standard input capacity of 150 sheets, 3 paper paths



\$339

SAMSUNG ML-2510 Laser

- The ML-2510 laser printer packs fast, professional-quality printing at up to 24 ppm in A4 into a compact footprint. Suitable for any home or small office, it gives you top-rated performance, easy-to-use features and a stunning design.



\$129

SAMSUNG ML-2571N Laser

- Samsung ML-2571N Monochrome Laser Printer, 24 ppm print speed, Up to 1,200 dpi x 600 effective output resolution, 32MB Memory, USB2.0 and Parallel Interfaces, Postscript3 and PCL 6 Emulation, 250 Sheet paper tray, 10/100 Network Card



\$259

SAMSUNG CLP300N

- CLP-300N Network Colour Laser Printer, 16 PPM in mono and 4 PPM in colour, with a max resolution of 2400 x 600 dpi, Manual Duplex, includes 150 sheet paper cassette, plus a 100 sheet output tray, Postscript3 and PCL 6 Emulation, Ethernet 10/100 Base TX, USB2.0



\$439

SAMSUNG SCX4521F

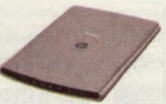
- Laser Multifunction Printer, Copier, Fax, Colour Scanner: Print sharp text and graphics at speeds up to 20 ppm. Fax fast with 3-second scan and 3-second transmission speeds. Fax directly from your PC. Or copy and scan with distinctly professional results.



\$339

Canon Lide70 Scanner

- High quality scanning up to 2400x4800dpi high resolution and 48 bit superior gradation.
- Automatic dust & scratch, fading, graininess correction.
- Four one-touch buttons Scan/Copy/PDF/E-mail.
- Advanced Z-Lid & scanning in the upright position.



\$129

Canon 600F Scanner

- High quality scanning at 4800x9600 dpi.
- 7 EZ buttons allowing you to quickly create a multiple-page PDF file • FARE Level 3, the optimal solution for film scanning.
- Film scanning: 6 frames of 35mm filmstrip (negative/positive)
- One-plug-in startup - No power cord



\$209

Canon 8600F Scanner

- High-resolution scanning up to 4800x9600dpi, 48 bit input/output resolution
- FARE Level 3, the optimal solution for film scanning • Continuous scanning of up to 12 frames of 35mm filmstrip or 4 mounted slides • 7 EZ buttons allowing you to quickly create a multiple-page PDF file



\$289

Canon 9950F Scanner

- 4800 dpi Hyper CCD IV sensor with 48-bit colour depth
- Scan up to 30 frames of 35mm filmstrip in a single pass
- New Super Tonic lens



\$629

EPSON Perfection V100

- The Epson Perfection V100 Photo sets a new mark for value and style in a desktop scanner. It features an Optical Resolution of 3200x9600dpi, an Optical Density of 3.2 Dmax and Transparency Unit for film scanning.



\$199

EPSON Perfection V350

- A total, high performance and versatile scanning solution for demanding users.
- Optical Resolution : Main 4800 dpi x Sub 9600 dpi • Scanning Speed : Monochrome A4 300dpi : 19 secs; 24bit colour A4 300dpi : 21 secs.



\$299

EPSON Perfection V700

- Super Res. Lens for 6400 dpi film scan
- Remove dust and scratches with DIGITAL ICE™ Technologies
- Excellent tone reproduction with 4.0 DMax optical density
- Scan film of up to 8x10"
- USB 2.0 and IEEE 1394 connection



\$719

Notting Hill (Head Office)
7 Howleys Rd., Notting Hill
Tel: (03) 8542 8688
Fax: (03) 9562 8781

West Melbourne Branch
130 Dudley St., West Melbourne
Tel: (03) 9223 4288
Fax: (03) 9328 1899

Model	19" Acer AL1916WD	22" Acer AL2216WD	17" BenQ FP71G+	19" BenQ FP91G+	19" BenQ FP92W	20" BenQ FP202W	22" BenQ FP222W	24" BenQ FP241W
								
View Angle	150H/135V	170/160	140/130	140/130	150/140	140/130	170/160	178/178
Contrast ratio	700:1	700:1	500:1	550:1	700:1	600:1	700:1	1000:1
Brightness	300cd/m ²	300cd/m ²	260cd/m ²	250cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	500cd/m ²
Response Time	5ms	5ms	8ms	8ms	5ms	8ms	5ms	16ms
Resolution	1440x900	1680x1050	1280x1024	1280x1024	1440x900	1680x1050	1680x1050	1920x1200
Price	\$289	\$429	\$239	\$289	\$289	\$349	\$449	\$1269
Model	17" LG L1719S	19" LG L1919S	19" LG 1952T	19" LG L194WT	20" LG L204WT	15" LG 1510BF Touch	19" Asus VW192G	22" Asus MW221U
								
View Angle	160H/160V	160/160	160/160	160/160	160/160	160/140	160/160	170/160
Contrast ratio	1400:1	1400:1	1400:1	2000:1	2000:1	450:1	800:1	700:1
Brightness	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	250cd/m ²	330cd/m ²	300cd/m ²
Response Time	8ms	8ms	8ms	5ms	5ms	16ms	5ms	2ms
Resolution	1280x1024	1280x1024	1280x1024	1440x900	1680x1050	1280x768	1440x900	1680x1050
Price	\$239	\$289	\$299	\$299	\$359	\$629	\$319	\$529
Model	19" Chimei CMV-938D	19" Chimei CMV-946D	22" Chimei CMV-221D	17" Philips 170S7FB,FS	17" Philips 170B7CB,CS	19" Philips 190S7FB, FS	19" Philips 190B7FB, FS	19" Philips 190CW7CS
								
View Angle	160/140	160/140	170/160	160/160	160/160	176/160	176/160	170/160
Contrast Ratio	600:1	600:1	800:1	600:1	600:1	700:1	700:1	850:1
Brightness	330cd/m ²	330cd/m ²	330cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²
Response Time	5ms	2ms	5ms	8ms	8ms	8ms	8ms	5ms
Resolution	1440x900	1440x900	1680x1050	1280x1024	1280x1024	1280x1024	1280x1024	1440x900
Price	\$269	\$289	\$399	\$249	\$289	\$319	\$359	\$299
Model	17"Samsung 740N	17"Samsung 740B	19"Samsung 940N	19"Samsung 940B	19"Samsung 940BW	20"Samsung 206BW	21"Samsung 215TW	22"Samsung 226BW
								
View Angle	160/160	160/160	160/160	160/160	160/160	160/160	178/178	160/160
Contrast Ratio	600:1	600:1	700:1	700:1	500:1	600:1	1000:1	700:1
Brightness	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	280cd/m ²
Response Time	8ms	8ms	8ms	8ms	4ms	6ms	8ms	5ms
Resolution	1280x1024	1280x1024	1280x1024	1280x1024	1440x900	1680x1050	1680x1050	1680x1050
Price	\$259	\$279	\$299	\$359	\$329	\$459	\$649	\$539
Model	17"Viewsonic VA703B	19"Viewsonic VA1912W	19"Viewsonic VA903B	19"Viewsonic VG1930WM	20"Viewsonic VG2021M	20"Viewsonic VG2030WM	20"Viewsonic VX2025WM	22"Viewsonic VX2235WM
								
View Angle	150/135	150/130	150/135	150/135	150/130	160/160	176/176	170/160
Contrast Ratio	700:1	500:1	700:1	700:1	500:1	800:1	1000:1	700:1
Brightness	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	300cd/m ²	280cd/m ²
Response Time	8ms	8ms	8ms	5ms	8ms	5ms	8ms	5ms
Resolution	1280x1024	1440x900	1280x1024	1440x900	1400x1050	1680x1050	1680x1050	1680x1050
Price	\$239	\$279	\$289	\$299	\$349	\$359	\$389	\$459

MP3 Player

SanDisk Sansa

- Sleek, thin design with large 1.8" TFT color screen
- Strong alloy metal casing
- User replaceable and rechargeable Lithium Ion battery
- Digital FM tuner

2GB E250 \$179

4GB E260 \$249

8GB E280 \$329



FunTwist 2GB 325 / 328

FunTwist D-Chord 325 or 328 MP3/WMA/WAV Player, 2GB Memory, Black or Silver color, Large 1.8" Color TFT LCD, 10 hours Playback Time, Support JPEG/Movie Play, Digital Voice/FM Recorder

\$129



i-Rocks MP3 FM Transmitter

By plugging in your USB flash drive or MP3 player (or any audio source with an audio output) into the i-Rocks IR-1110 MP3 DJ FM Transmitter - Silver and then tuning to the specified FM channel, you can immediately enjoy listening to your favourite digital music over your car stereo.

\$69



Kaiser Bass Digital Photo Frame

Show all your digital photos as slideshows with background music: • Easy-to-use menu screen with onboard buttons • 32MB memory • Adjustable leg length • Rotate, Zoom, Set Slideshow Duration • Wall mount hole & tripod screw hole • Infra-red remote control

5.6" \$249

8.0" \$349



Projectors

EPSON EMP-S4

- 1500 ANSI lumens (Low Brightness mode)
- Contrast 500:1
- Dimensions : 327mm(W) x 247mm(D) x 99mm(H)
- Weight : 2.6kg

\$929



EPSON EMP-TW20

- High Brightness Mode: 1200 ANSI Lumens (Dynamic)
- Contrast: 1,000:1
- Aspect ratio: 16:9
- Weight: Approx. 3.5kg

\$1299



LG DS125

- Brightness: 2500 ANSI lumens
- Contrast: 2000:1
- Native SVGA(800x600)
- Lamp Life: Normal = 3000hr, Economic = 4000hr
- Ultra Light Weight 1.9Kg

\$1059



LG DX125

- Brightness: 2500 ANSI lumens
- Contrast: 2000:1
- Native XGA(1024x768)
- Lamp Life: Normal = 3000hr, Economic = 4000hr
- Ultra Light Weight 1.9Kg

\$1549



BENQ CP120 Wireless

Benq CP120 Native XGA Resolution Built-in wireless connection (802.11a/b/g) 1500 Ansi Lumens 2000:1 contrast ratio 2.91lbs(1.3kg) Auto Keystone & Auto Sync with one Touch 3000hrs lamp life(eco.mode)

\$1999



BENQ MP611

- Brightness: 2400 ANSI Lumens
- Contrast Ratio: 2000:1
- Lamp Life Up to 3000/4000 hours (Normal/Economic mode)
- Image size: 31" to 300"

\$999



BENQ MP721

- Brightness: 2500 ANSI lumens
- Contrast: 2000:1, Aspect ratio: 16:9
- Lamp Life Up to 3000/4000 hours (Normal/Economic mode)
- Image size: 31" to 300"

\$1699



BENQ W100

- Brightness: 1300 ANSI lumens
- Contrast: 2500:1, Aspect ratio: 16:9
- Lamp Life 3000/4000 hrs (Normal /Economic Mode)
- Image size: 35" to 160"

\$1289



TOSHIBA TDP-S35

- Native Resolution: SVGA 800x600
- Projector format: 4 : 3 switchable to 16 : 9
- Brightness: 2000 ANSI Lumens
- Contrast Ratio: 2000:1
- Weight: 3.0kgs

\$1199



TOSHIBA TDP-T9

- Resolution: XGA 1024 x 768 pixels
- Brightness: 2000 ANSI Lumens
- Contrast Ratio: 2000:1
- Remote control with laserpointer

\$1999



acer XD1170D

- Brightness: 2,300 ANSI Lumens (STD)
- Contrast Ratio: 2000:1
- Native Resolution: 800 x 600 (SVGA)
- Dimension: 230 x 238 x 123 mm
- Weight: 2.2kg

\$1049



acer PD323

- Brightness: 1,700 ANSI Lumens
- Contrast Ratio: 2000:1
- Native Resolution: 1024 x 768 (SVGA)
- Dimension: 216x169x62mm
- Weight: 1.3kg only

\$1799



SONY VPLCS21

- 3LCD technology
- Stylish design - slimmest in the market
- 2100 ANSI Lumens
- Light weight of 1.9kg
- SVGA (800 x 600)

\$1599



SONY VPLCX21

- 3LCD technology
- Stylish design - slimmest in the market
- 2100 ANSI Lumens
- XGA (1024 x 768) resolution
- Light Weight of 1.9kg

\$2199



SONY VPLES3W

- 3LCD technology
- 2000 ANSI Lumens
- Quiet Operation, as low as 29dB
- SVGA (800 x 600)

\$1299



2C See It Pull Down Projector Screen

2C see it pull down wall/ceiling mount projector screen, manual pull down with white borderless screen.

84" \$269

100" \$299



Joy Stick

Harmony 525

With instant access to an internet-based worldwide database of infra-red codes, you can control all devices from all manufacturers, including HDTV, satellite and cable boxes. The Harmony 525 will make Home Entertainment the way it should be: simple.

\$119



Harmony 785

Harmony 785 Advanced Universal Remote • Simple one-touch activity control • Replaces up to 15 remote controls • Large and clear colour LCD display • Long lasting rechargeable battery

\$259



Harmony 1000

Logitech® Harmony® 1000 Advanced Universal Remote, the latest and most intelligent evolution of simple, 3.5" color one-touch fingertip control.

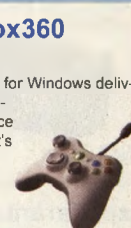
\$469



Microsoft Xbox360 Controller

the Xbox 360 Controller for Windows delivers a consistent and universal gaming experience across both of Microsoft's gaming systems.

\$59



Attack3

The entry level eight button joystick with a versatile grip handle; includes throttle control.

\$29



Extreme 3D Pro

Premium twist handle joystick with a modern design for maximum comfort and control.

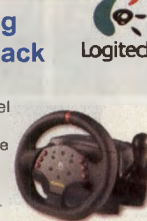
\$45



Momo Racing Force Feedback Wheel

With a full rubber wheel and a stick shift, this MOMO designed Force Feedback wheel turbocharges your driving experience.

\$135



G25 Racing Wheel

The G25's unique dual-motor force feedback transmission delivers powerful, high-fidelity force effects to the hand-stitched leather wheel, so you can feel under-and oversteer before you're on the barrier.

\$379



Media KB Elite

Sleek, Ultra-flat design with Convenient controls, work smarter, communicate better, and have more fun with this Ultra-flat keyboard that offers ergonomic features and a wealth of convenient functions.



\$39



G11 Gaming KB

Featuring illuminated characters on every key, the G11 is perfect for marathon flag defense sessions or late-night raids. Use any of the 18 fully programmable G-keys to execute complex macros with a single keypress, and with 3 modes for each key, you can have 54 custom programmed keys per game.



\$89



G15 Gaming KB

The Logitech® G15 offers gamers in-game information, program-mobility and control. Its adjustable-tilt, backlit LCD display shows you crucial information during game play, and lets you set timers to keep track of game events.



\$119



Deluxe 250 Desktop

The Logitech® Deluxe 250 Desktop offers a comfortable, conservatively-designed keyboard with drain holes for spill-resistance. The desktop includes the best-selling and equally durable Logitech® Optical Mouse, with a familiar shape and a quality feel—ideal for any user.



\$39



Cordless Desktop EX110

Have the clean, wire-free desk space you've dreamed about. The sleek Logitech® Cordless Desktop® EX 110 makes it incredibly easy and affordable to go cordless—in style.



\$59



Internet 1500 Laser Cordless Desktop

The Internet 1500 Laser Cordless Desktop, the keyboard includes driver free hot keys such as Calculator, Email, Media, Internet and more. The included Laser mouse features 1000 dpi precision with complete power management.



\$69



Rechargeable Cordless Desktop

The Cordless Rechargeable Desktop OEM: • Logitech Cordless Desktop Optical KB • Logitech Click! Rechargeable Optical



\$89



Cordless Desktop LX 710 Laser

Maximize your music and photo experience with easy-to-use, one-touch controls for audio playback and image editing. Enjoy superior comfort with soft-touch surfaces, adjustable keyboard angles, and industry-leading durability and reliability.



\$109



Cordless Desktop MX™ 3200 Laser

Working with Windows Vista™, the Cordless Desktop® MX™ 3200 Laser makes it easy to access advanced features. Enjoy ultra-precise navigation with the high-resolution laser mouse, and easy Internet call management with convenient one-touch controls.



\$139



Cordless Desktop MX™ 5000 Laser

The Cordless Desktop MX 5000 Bluetooth Laser, the keyboard's LCD lets you navigate media playlists or online radio stations, view time/date and more while awesome touch-sensitive media controls let you glide to exactly the desired.



\$199



diNovo™ Media Desktop™ Laser

The Logitech® diNovo™ Media Desktop Laser: • Bluetooth® MediaPad — long range Bluetooth® enabled remote commander • Rechargeable MX Laser mouse • Unique, ultra-flat keyframe technology • Smart power management • Tilt Wheel Plus Zoom™



\$259



diNovo Edge

An ideal partner for any high-end computer, the ultra-slim Logitech® diNovo Edge™ delivers the ultimate in feel and response. The revolutionary Touch-Disc™ with hyper-speed scrolling and pixel-perfect control makes trackpads obsolete.



\$269



Microsoft® Business Hardware Pack

• Built-in zoom slider—zoom in and out
• "My Favorites" keys—easy access to Web sites and files & Customizable hot keys
• Multimedia center
• Detachable palm rest



\$49

Microsoft® Digital Media Pro Keyboard

It features a new Zoom Slider that lets you zoom in and out of documents and pictures with ease. Customizable My Favorites keys, Media Center, and Hot Keys give you one-touch access to commonly accessed media, programs, and files.



\$49

Microsoft® Natural Ergonomic 4000

The Natural Ergonomic Keyboard 4000 is designed to give you a more natural wrist alignment, letting you work more comfortably. One-touch access to commonly used files and programs enhances productivity.



\$69

Microsoft® Remote KB for WinXP Media Center

Microsoft Remote Keyboard for use with Windows Media Centre Edition. 3-in-1 keyboard with integrated mouse and remote control. Launch digital media, surf the Web, watch movies, and send instant messages from up to 30 feet away..



\$99

Microsoft® Wireless Optical Desktop 2000

The Microsoft® Wireless Optical Desktop 2000 features a compact Comfort Curve keyboard that lets your hands rest naturally and comfortably.



\$69

Microsoft® Wireless Optical Desktop 5000

Enjoy better photos with this all-in-one photo editing solution—photo keyboard, mouse and software all-in-one. Includes Microsoft Digital Image Standard 2006, powerful and easy to use software for organizing and managing photos.



\$79

Microsoft® Wireless Laser Desktop 6000

Microsoft Wireless Laser Desktop 6000 features: High Definition Laser Technology, Wireless Freedom, Magnifier, Zoom Slider, Comfort Curve Keyboard Layout



\$119

Microsoft® Wireless Entertainment Desktop 7000

This ultra-thin entertainment desktop set with rechargeable mouse delivers on/off desk top-notch performance with virtually no interference—from up to 30 feet away.



\$209

Razer Tarantula Tournament Ed. Gaming KB

32kb onboard memory (up to 5 customizable profiles), 10 programmable hot keys, on-the-fly gaming profile activation, Fully interchangeable keys to allow different key placement around the board, Media center keys to control media programs



\$139

2-Button Gaming Keyset



\$39

2-Button Wolf Claw Devour Gaming Pad

• Total 55 keys in Ergonomic layout.
• Onboard Volume Control and Esc keys.
• Sturdy and Solid Base.
• High quality and Splash Proof Casing.
• 3 Layer Silicon for Quiet Key Typing
• 10 Million Key Press Life Span



\$59

2-Button USB Gaming Keyboard

A Zboard™ Base has an auto recognition feature for any keyset you insert. There's no need to install any additional software. It is the brain behind the brawn. Just switch Keysets & Play your favorite games.



\$79

LX5 Cordless Optical Mouse

Cordless Freedom made easy. The Logitech LX5 Cordless Optical Mouse installs effortlessly and features smart power management for up to 8 months of battery life. Tilt wheel plus zoom is perfect for viewing digital photos and spreadsheets. Battery indicator light.



\$39

LX7 Cordless Optical Mouse

Logitech LX7 Cordless Optical Mouse, the soft-touch rubber grip provides natural comfort, and the wireless mini-receiver installs effortlessly and eliminates clutter. Smart power management extends battery life up to 8 months.



\$59

G3 Laser Mouse

- Full-speed USB at 500 reports/second
- 2000 dpi gaming-grade laser engine
- Built for long gaming sessions
- Precise, fingertip control design
- Sensitivity switching on-the-fly
- Polytetrafluoroethylene gaming feet



\$59

G5 Laser Mouse

Logitech G5 Laser Mouse features: PC • Optical • USB • Scroll wheel • Application Switch • Tilt Wheel Plus Zoom™ • Right-Handed Comfort Grip • Laser Technology



\$89

G7 Laser Cordless Mouse

Logitech G5 Laser Mouse features: PC • Cordless • USB • Scroll wheel • Application Switch • Tilt Wheel Plus Zoom™ • Right-Handed Comfort Grip • Rechargeable • Laser Technology



\$119

MX400 Laser

The contoured shape and soft rubber grip make using the MX-400 effortless, while advanced laser technology provides ultra-precise tracking on almost any imaginable surface, including those that resist optical mice.



\$49

MX™ Revolution

Smarter, faster, and fully-loaded, Logitech's innovative MicroGear™ Precision Scroll Wheel lets you fly through long documents at hyperspeed, or switch to precise click-to-click scrolling for navigating lists, slides, and image collections.



\$129

VX Revolution

Logitech VX Revolution, the ultimate notebook mouse. Logitech's innovative MicroGear™ Precision Scroll Wheel lets you fly through long documents at hyperspeed, or switch to precise click-to-click scrolling to navigate lists, slides, and image collections.



\$99

V200 Cordless for Notebook

V200, 2.4GHz digital cordless, provides longer range and delivers interference-free operation. The 2.4GHz micro-receiver snaps into the mouse for easy transport and turns it off for power efficiency.



\$59

V450 Laser Cordless for Notebooks

Logitech® V450 Laser Cordless Mouse for Notebooks, Laser precision, ergonomic comfort. Redefining mobile performance with laser tracking, a comfortable design, and up to a year of battery life.



\$59

V270 Cordless Optical Notebook for Bluetooth

More comfortable than a touch pad and just as convenient, the V270 instantly connects to notebooks enabled with Bluetooth wireless technology, providing up to 10m of cordless range. It is also compatible with Apple PowerBooks.



\$69

Microsoft® Habu™ Laser Gaming Mouse

Microsoft Habu Laser Gaming Mouse unites legendary Microsoft comfort with the latest in Razer precision. It features:

- Ergonomic design
- Wheel scrolling
- USB connector
- Customizable buttons



\$119

Microsoft® Wheel Optical

Wheel Mouse Optical replaces the old-fashioned mechanical mouse ball, allowing you to work on virtually any surface. With a convenient scroll wheel and comfortable design, Wheel Mouse Optical is a great value.



Beige/Black

\$25

Microsoft® IntelliEye Optical Mouse

Microsoft's IntelliMouse Optical features silver detailing, Microsoft's signature glowing red underside and taillight, and ergonomic enhancements to provide comfort for left- and right-handed users.



\$29

Microsoft® Explorer Optical Mouse

Microsoft IntelliMouse Explorer with Tilt Wheel Technology changes the way you scroll – now you can scroll horizontally as well as vertically – making it faster and easier to move through documents and web pages.



\$39

Microsoft® Standard Wireless Optical Mouse

Turn your desktop into a vibrant, clutter-free space with the Wireless Optical Mouse. Wireless technology, a wider, clear scroll wheel, and signature red optical glow combine in a fun design.



Black \$39
Blue \$49

Microsoft® Wireless Notebook Optical Mouse 4000

Travel in comfort and control with the Microsoft Notebook Optical Mouse 4000. Get greater control with Tilt Wheel Technology for 4-way scrolling and Magnifier for enlarging screen details. Plus, prolong battery life with the Snap-In Receiver that automatically turns off the mouse.



\$49

Microsoft® Wireless Notebook Laser Mouse 6000

Unprecedented control in a High Definition, wireless notebook laser mouse. For the control you'd expect from a desktop mouse, plus the superior performance, precision, and power of High Definition Laser Technology, select the Microsoft Wireless Notebook Laser Mouse 6000.



\$89

Microsoft® Wireless Optical Mouse 5000

Microsoft wireless optical mouse 5000 offers High Definition technology for unprecedented tracking precision.

- High Definition Optical technology
- Wireless freedom
- Magnifier
- Tilt Wheel technology
- Smart Receiver



\$69

Microsoft® Wireless Laser Mouse 6000

Microsoft laser mouse 6000 offers better accuracy and smoother tracking

- Laser Technology
- Precision Booster and Gaming Toggle
- Magnifier
- Longer cord
- Scroll wheel with detents



\$89

Microsoft® Remote Control and Receiver for Media Center PC

A Media Center compatible remote control that keeps all of the entertainment on the computer within easy reach and complements the keyboard and mouse.



\$69

RAZER Krait Infrared Gaming Mouse

Razer Krait Infrared High Precision Gaming Mouse with Orange LED, 3-Buttons independently programmable, 1600 DPI, USB 2.0, Ambidextrous design, 6400 frames per second 16 bit data path. High speed motion detection.



\$49

RAZER Diamondback

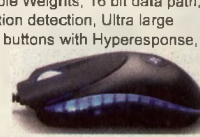
Razer Diamondback Infrared Optical Precision Gaming Mouse, 7-Buttons independently programmable, 1600 DPI high performance sensors, 6400 frames per second, 16 bit data path, High speed motion detection, Ultra large non-slip mouse buttons, rubber side rails for improved grip, Always On Mode, Chameleon/ Green/ Plasma/ Salamander available.



\$69

RAZER Copperhead

Razer Copperhead Infrared High Precision Gaming Mouse with Blue LED, 7 Hyper-response Buttons independently programmable, 2000 DPI high performance sensors, 1ms Response Time, 32KB Onboard Memory, up to 3 Customizable Weights, 16 bit data path, High speed motion detection, Ultra large non-slip mouse buttons with Hyperresponse, Always On Mode, Blue or Red Color.



\$89

Canon A450

- 5.0 Megapixel
- 3.2x optical zoom lens
- Super fast DIGIC II Imaging Processor
- 2.0" LCD Screen
- Movie recording and play-back



\$169

Canon A550

- 7.1 Megapixel
- 4x optical zoom lens
- DIGIC II Imaging Processor
- 2.0" LCD Screen
- Movie recording and play-back with sound.



\$239

Canon A560

- 7.1 Megapixels
- 4x optical zoom lens.
- Face Detect with Auto Focus, Auto Exposure, Flash Exposure and in camera red-eye correction
- 2.5" LCD Screen



\$309

Canon A570is

- 7.1 Megapixels
- 4x optical zoom lens.
- DIGIC III and Image Stabilizer
- 2.5" LCD Screen



\$369

Canon A630

- 8.0 Megapixels
- 4x optical zoom
- 2.5" vari-angle LCD screen
- DIGIC II
- 21 Shooting Modes



\$369

Canon A640

- 10.0 Megapixels
- 4x optical zoom
- 2.5" vari-angle LCD screen
- DIGIC II
- 21 Shooting Modes



\$459

Canon A710

- 7.1 Megapixels
- 6x Optical zoom
- Optical Image Stabilizer
- 2.5" LCD Screen
- DIGIC II



\$409

Canon IXUS70

- 7.1 Megapixels.
- 3x optical zoom lens.
- DIGIC III Imaging Processor
- Face Detect with Auto Focus, Auto Exposure, Flash Exposure and in camera red-eye correction
- Large 2.5 LCD



\$429

Canon IXUS75

- 7.1 Megapixels.
- 3x optical zoom lens.
- DIGIC III Imaging Processor
- Face Detect with Auto Focus, Auto Exposure, Flash Exposure and in camera red-eye correction
- Large 3.0 LCD



\$469

Canon IXUS 800 IS

- 6.0 Megapixel
- Canon 4x optical zoom lens with Optical Image Stabilizer.
- Huge 2.5 inch LCD



\$489

Canon IXUS 850 IS

- 7.1 Megapixel.
- Canon 3.8x optical zoom
- 28mm wide lens.
- Huge 2.5 inch LCD screen.



\$569

Canon IXUS 900 Ti

- 10.0 Megapixels.
- Striking Titanium body
- Canon 3x optical zoom
- Huge 2.5 inch LCD screen.



\$569

Canon IXUS i7

- 7.1 Megapixel.
- Canon 2.4x optical zoom lens.
- Choice of 4 fashionable colours
- 1.8 inch LCD screen.



\$359

Canon S3 IS

- 6.0 Megapixel
- 12x optical zoom, 4x optical zoom
- High quality, full motion movie shooting
- 2.5" inch LCD screen



\$489

Canon G7

- 10.0 Megapixels.
- Canon 6x optical zoom lens with Optical Image Stabilizer.
- Huge 2.5 inch LCD screen.
- Full manual controls



\$729

Canon TX1

- 7.1 Megapixel.
- 10x optical zoom lens with Optical Image Stabilizer.
- High definition movie with stereo sound.
- DIGIC III Imaging Processor



\$589

Panasonic DMC-FX10

- 6.0 Megapixel
- 3x optical zoom with MEGA OIS, 2.5" LCD screen
- Record stunning movies in wide VGA 848x480
- Long battery life. Up to 350 shots



\$369

Panasonic DMC-FX12

- 7.2 Megapixel
- 3x optical zoom with MEGA OIS, 2.5" LCD screen.
- Record stunning movies in wide VGA 848x480.
- Long battery life. Up to 350 shots.



\$429

Panasonic DMC-FZ8

- 7 Megapixel Effective
- 12x Optical/4xDigital Zoom
- 2.5 inch Large Bright LCD
- Dual Image Stabilisation
- 27MB built-in memory



\$569

Panasonic DMC-FZ50

- 12x Optical Zoom Leica DC Lens
- 10.1 Effective Megapixels
- Intelligent Image Stabiliser
- Venus Engine III



\$799

Panasonic DMC-LZ7

- 7.0 Megapixel Camera.
- 6x Optical, 4x Digital Zoom.
- MEGA Optical Image Stabiliser (clearer images).
- Records video 848x480 @ 30fps with sound
- 2.5" LCD Monitor



\$399

Panasonic DMC-TZ1

- 5 Megapixel Effective
- 10x Optical Zoom, 4xDigital Zoom
- 35-350mm OIS Lens
- 2.5" LCD



\$539

OLYMPUS FE210

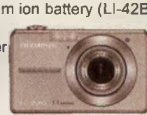
- 3x optical zoom
- One button, one function design principle
- Shakeproof anti-blur mode
- Large 2.5" LCD screen
- 15 scene modes



\$199

OLYMPUS FE220

- 3x optical zoom
- Slim metal body
- Shakeproof anti-blur mode.
- Large 2.5" LCD screen.
- Movie mode with sound.
- Lithium ion battery (LI-42B) and charger



\$279

OLYMPUS FE240

- 5x Optical Zoom lens
- Slim-line metal case.
- Movies w/sound 640x480 @ 30fps
- Large 2.5" LCD screen.
- Lithium ion battery (LI-42B) and charger



\$359

OLYMPUS SP510

- Battery life up to 630 shots
- Shakeproof
- Nightproof
- 7.1 Megapixels
- 10x Optical Zoom
- High Light Sensitivity



\$449

OLYMPUS SP550

- 18x Optical Zoom
- Wide angle lens (equiv. 35mm) 28 - 504mm
- Dual Image Stabilization
- High burst rate (up to 15fps at 1.2 Megapixel)
- Super Macro mode



\$699

OLYMPUS MJU725

- Waterproof (5m)
- Shock Proof (1.5m)
- Shakeproof anti blur mode
- 7.1 Megapixels
- 3.0x Optical Zoom
- 2.5" LCD Screen with Auto Back-light Under-water



\$499

OLYMPUS MJU770

- Waterproof to 10M and Shock Proof up to 1.5M.
- Freezeproof up to -10°C.
- Crushproof up to 100kg
- Tough metal body.
- 2.5" LCD screen



\$529

OLYMPUS MJU1000

- 10.0 Megapixel
- 3x optical zoom & camera shake compensation
- Splashproof All Metal Construction
- Nightproof picture and movie clarity
- 2.5" LCD



\$579

SONY DSC H2

- 6 Megapixel CCD
- 12x Optical Zoom / 24x Precision Digital Zoom
- 2.0" Colour LCD
- 30MB Internal Memory.
- Memory Stick PRO compatible



\$549

SONY DSC H5

- 7.2 Megapixel CCD
- 12x Optical Zoom / 24x Precision Digital Zoom
- 3.0" Colour LCD
- 30MB Internal Memory.
- Memory Stick PRO compatible



\$649

SONY DSC N2

- 10.1 Mega Pixel CCD
- 3X Optical Zoom
- 3.0" Touch Screen, Hybrid Clear Photo LCD Plus
- Slide show with Music & Effects



\$649

SONY DSC S650

- 7.2MP Camera
- 3 x Optical Zoom
- 24mb internal Memory
- 2" Colour LCD
- Memory Stick Duo & Pro Duo compatible.



\$239

SONY DSC S700

- 7.2MP Camera
- 3 x Optical Zoom
- 24mb internal Memory
- 2.4" Colour LCD
- Memory Stick Duo & Pro Duo compatible.



\$279

SONY DSC T100

- 8.1 Effective Mega Pixels
- 5X Optical Zoom / Full Metal Body
- Full HD 1080i Output
- 3.0" Hybrid LCD screen.



\$659

SONY DSCW35

- 7.2 Megapixel
- 3 x Optical Zoom, 58mb internal memory
- Carl Zeiss Vario-Tessar lens
- 2" LCD, Memory Stick Duo & PRO Duo compatible.



\$359

SONY DSCW55

- 7.2 Megapixel
- 3 x Optical Zoom, 58mb internal memory
- Carl Zeiss Vario-Tessar lens
- 2.5" LCD, Memory Stick Duo & PRO Duo compatible.



\$399

SONY DSCW100

- 8.1 Megapixel CCD
- 3x Optical Zoom
- 2.5" Colour LCD
- 64mb internal Memory
- Stamina: 360 shots/180mins



\$499

Canon MD120

- Powerful Canon 35x zoom lens, includes Canon Image Stabilisation for smooth shake free films
- 800k pixel CCD and DIGIC DV for outstanding image quality



\$389

Canon MD160

- Powerful Canon 35x zoom lens, includes Canon Image Stabilisation for smooth shake free films
- 800k pixel CCD and DIGIC DV for outstanding image quality
- Ultra fast QuickStart less than 0.7seconds • 2.7" Widescreen LCD • Night Mode LED & Wireless Remote Control



\$549

Canon DC40

- 4.29 Megapixel CCD
- Direct-to-DVD shooting
- High resolution genuine Canon 10x zoom lens
- RGB Colour Filter & DIGIC DV Processor
- Real 16:9 Widescreen recording
- DVD movie making software included.



\$1359

Canon DC210

- Powerful Canon 35x zoom lens, includes Canon Image Stabilisation for smooth shake free films
- 800k pixel CCD and DIGIC DV II • QuickStart • Real Widescreen recording and 2.7" Widescreen LCD



\$549

Canon DC220

- Powerful Canon 35x zoom lens, includes Canon Image Stabilisation for smooth shake free films
- 800k pixel CCD and DIGIC DV II • Ultra fast QuickStart < 0.7seconds • Real Widescreen recording and 2.7" Widescreen LCD



\$589

Canon DC230

- Powerful Canon 35x zoom lens, includes Canon Image Stabilisation for smooth shake free films
- 1.07M pixel CCD and DIGIC DV II • QuickStart • Real Widescreen recording and 2.7" Widescreen LCD • Night Mode LED & Wireless Remote Control



\$629

Canon DC22

- Supports dual layer DVD's
- 2.2 Megapixel CCD for high quality photos and video
- High resolution genuine Canon 10x zoom lens
- Real 16:9 Widescreen recording



\$829

Panasonic NV-GS60

- Powerful 30x Optical Zoom
- Features Quick Start for those special moments
- Colour Night View for shooting in dim light
- 2.5" LCD Screen



\$479

Panasonic NV-GS230

- 3CCD Camera System
- 2.3 Megapixel Still Picture Recording with Simultaneous Motion Video, 10x Optical Zoom
- 2.5" LCD Screen



\$799

Panasonic VDR-D150

- 30x Optical Zoom
- Pure Colour Engine
- Support Multi-Format Recording (DVD-RAM, DVD-R, DVD-RW)
- Joystick control - Simple, one-handed operation



\$649

Panasonic VDR-D250

- 3CCD Camera System
- 2.3 Megapixel Still Picture Recording
- 10x Optical zoom
- Multi-Format Recording
- 2.7 inch LCD Screen



\$999

Panasonic VDR-D300

- 3CCD Camera System
- Multi-Format Recording
- Optical Image Stabiliser
- Leica Dicomar Lens
- 10x Optical Zoom



\$1569

SONY MiniDV DCRHC38

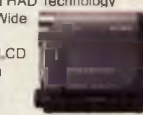
- 40x Optical 80x / 2000x Digital
- Carl Zeiss Vario-Tessar Lens
- 1/6" (3mm) CCD with Advanced HAD Technology
- 2.5" Touch Panel LCD Screen



\$479

SONY MiniDV DCRHC48

- 25x Optical 50x / 2000x Digital zoom with wide angle setting
- Carl Zeiss Vario-Tessar Lens
- 1/6" (3mm) CCD with Advanced HAD Technology
- 2.7" Wide Touch Panel LCD Screen



\$599

SONY DCRHC96

- 10X Optical/120X Digital Zoom
- Professional Quality Carl Zeiss Vario-Sonnar Lens
- 2.7" Wide Hybrid LCD Screen
- 1/3" 3.3 Mega Pixel CCD
- SteadyShot Picture Stabilization System



\$859

SONY DCRSR42

- 30GB Hard Disk Drive
- 40x Optical zoom, 2.5" 4:3 LCD Touch Screen, Record in 4:3 or 16:9 aspect ratio, Carl Zeiss Vario-Tessar Lens, includes Handycam Station



\$859

SONY DCRSR60

- 30GB Hard Disk Drive
- 12x Optical zoom, 2.7" 16:9 Wide LCD Touch Screen, Record in HQ 16:9, Carl Zeiss Vario-Tessar Lens.



\$899

SONY DCRDVD608

- Record Direct to DVD
- DVD+RW/-RW /+R DL Recording Formats
- 1/6" (3mm) 960H CCD with Advanced HAD Technology
- 40x Optical / 80x/2000x Digital Zoom
- 2.5" Touch Screen LCD



\$639

SONY DCRDVD708

- Record Direct to DVD
- DVD+RW/-RW /+R DL Recording Formats
- 1/6" (3mm) 960H CCD with Advanced HAD Technology
- 25x Optical / 24x/480x Digital Zoom
- 2.7" Touch Screen LCD



\$749

SONY DCRDVD805

- Record Direct to DVD, DVD-R/-RW/+RW format
- 10X Optical/20X/120X Digital
- 2.7" Wide Touch Screen
- 3.3 Megapixel



\$1099

SONY DCRDVD905

- 10x Optical / 20x/120x Digital Zoom, • Dolby Digital 5.1 Channel Recording, Dolby Digital 2 Channel Recording, • 4.0 Mega Pixel Still Image Capture



\$1199

Camera Media

XD Card

512MB / 1GB / 2GB XD Card \$49/69/109

Compact Flash Card

512MB / 1GB / 2GB / 4GB Compact Flash \$25/39/59/89
1GB / 2GB / 4GB Sandisk UltraII Compact Flash \$39/69/129
1GB / 2GB Sandisk ExtrememIII Compact Flash \$79/119

Secure Digital Card

512MB / 1GB / 2GB / 4GB Secure Digital \$19/29/39/69
512MB / 1GB / 2GB Mini Secure Digital \$19/29/39
1GB / 2GB Sandisk Mini Secure Digital \$35/49
512MB / 1GB / 2GB Sandisk Secure Digital \$25/35/49
1GB / 2GB Sandisk UltraII Secure Digital \$39/59
1GB / 2GB Sandisk ExtrememIII Secure Digital \$69/119
1GB / 2GB Sandisk Transflash Micro Secure Digital \$39/69

Memory Stick Card

1GB / 2GB / 4GB Sandisk Memory Stick Pro Duo \$59/89/149

Camera Accessory

Canon Camera Accessories

Canon AC Power Adaptor ACK500/ 600/ 800/ 900 \$99
Canon Battery Charger NB1LH/ NB2LH / NB3L/ NB4L/ NB5L \$79
Canon Camera Case SCDC20 / SCDC40/ SCPS600 \$49
Canon Water Proof Case WPDC80 / WPDC90 \$269
Canon Wide Lens Converter WDH27/ WDH34/ WDH37 \$229
Canon Tele-Convertor Lens TCDC52 / TCDC58 \$189

Panasonic Camera Accessories

Panasonic AC Power Adaptor DMW-CAC1 \$139
Panasonic Battery CGA-002E \$99
Panasonic Marine Case DMW-MCFX01E / DMW-MCTZ1E \$459

Sony Camera Accessories

Sony AC Power Adaptor ACLS5K \$79
Sony Infolithium Rechargeable Battery NPFC11/ NPFE1 \$99
Sony Soft Carry Case LCSCP2 / LCSSA \$49
Sony Sports Pack for Mini DV & DVD Handy SPKHCB \$369

Targus 3-in-1 Bag/ Tripod/ 14-in-1 reader +3port Hub \$49

Canon Cartridges

Cartridges	Colour	Printers	Price
BCI-21BK	Black	BJC-2000series, 4000series,	\$15
BCI-21C	Colour	5000series, S100, MPC-20/30/50/70/75	\$23
BCI-24BK	Black	S200sp(x), S300 series, i250, i320,	\$14
BCI-24C	Colour	i350, i450, i455D, i470, i475D,	\$26
		MPC190, 200, MPC360, 370	
BCI-3EBK	Black	BJC-3000, BJC-6000 series, S400,	\$22
BCI-3EC	Cyan	S450, S520, S600, S750, S450,	\$19
BCI-3EM	Magenta	S6300, i550, i560(B), i850, i865(B),	\$19
BCI-3eY	Yellow	i6100, i6500, MPC-100, MP700, 730	\$19
BCI-3ePB	Photo Black		\$19
BCI-3ePC	Photo Cyan		\$19
BCI-3ePM	Photo Magenta		\$19
BCI-6BK	Black	BJC-8000, 8200, BJF850/ F860	\$24
BCI-6C	Cyan	/F870, S800 series, S900, S9000,	\$24
BCI-6M	Magenta	i560(C,M,Y), i865(B,C,M,Y), i905D,	\$24
BCI-6Y	Yellow	i950, i965, i9100	\$24
BCI-6PC	Photo Cyan		\$24
BCI-6PM	Photo Magenta		\$24
BCI-15BK	Black	i70/ i80/ i90	\$29
BCI-16C	Color		\$45



Epson Cartridges

Cartridges	Colour	Printers	Price
T028	Black	Stylus C60, C61,	\$42
T029	Colour	CX3100	\$37
T038	Black	Stylus C41SX, C41UX,	\$16
T039	colour	C43UX	\$26
T0321	Black	Stylus C70, C80, C82	\$39
T0322	Colour		\$19
T0422C	Cyan	Stylus C82, CX5100,	\$18
T0423M	Magenta	CX5200, CX5300	\$18
T0424Y	Yellow		\$18
T0461	Black	Stylus C63, C83,	\$19
T0472	Cyan	CX6300	\$12.5
T0473	Magenta		\$12.5
T0474	Yellow		\$12.5
T0491	Black	Stylus Photo R210,	\$18
T0492	Cyan	R310, RX510	\$18
T0493	Magenta		\$18
T0494	Yellow		\$18
T0495	Light Cyan		\$18
T0496	Light Magenta		\$18



HP Cartridges

Cartridges	Colour	Printers	Price
HP 51625A	Color	DeskJet 3300, 3320, 3325, 3400, 3420, 3425, 3450, 3500, 3550, 3600,	\$39
HP 51626A	Black	3650, series 5550, 332x	\$44
HP 51641A	Color	DeskJet 450, 5150, 5160, 5550, 5551, 5650, 5652, 5850, OfficeJet	\$46
HP 51645A	Black	4100, 4110, 6110	\$39
HPC6656A	Black	Photosmart 100, 130, 145, 230, 245, 2410, 7150, 7260, 7350, 7550	\$26
HPC6657A	Color	7660, 7760, 7960	\$49
92298A	(Toner)	LaserJet 4, 4 Plus, 4M, 4M Plus, 5, 5M and 5N	\$139
C4191A	(Toner)	LaserJet 4500	\$129
C3903A	(Toner)	LaserJet 5P, 5MP, 6P and 6MP	\$119
C3906A	(Toner)	LaserJet 1100,	\$89
C4092A	(Toner)	LaserJet 1100, 3200 series	\$89
C4127A	(Toner)	LaserJet 4000, 4000N, 4050, 4050N	\$149
C7115A	(Toner)	LaserJet 1000, 1220, 3300, 3310, 3320, 3330, and 3380 series	\$89
C9700A	(Toner)	LaserJet 2500	\$139



Samsung Toner

Cartridges	Printers	Price
ML-1210D3	ML-1010, 1430, 1020M, 1210, 1220M, 1250	\$109
ML-1710D3	ML-1510, 1710, 1740, 1750, 1710P	\$109
ML-6060D6	ML-6040, 6060, 6060N, 6060S, 1451N, 1450, 1440	\$169
SCX-4216D3	SCX-4016, 4116, 4216F	\$109
SCX-5312D6	SCX-5112, 5312F, 5115, 5315F, SF-830, 835P	\$99
CLP-500D5C	CLP-500, 500N, 550, 550N Cyan	\$149
CLP-500D5Y	CLP-500, 500N, 550, 550N Yellow	\$149
CLP-500D5K	CLP-500, 500N, 550, 550N Black	\$149
CLP-500D5M	CLP-500, 500N, 550, 550N Megenta	\$149

Brother Toner

Cartridges	Printers	Price
TN-3060	HL5130, 5140, 5150D, 5170DN, MFC-8220, 8440, 8840N, 8840DN	\$109
TN-6600	HL-1030, 1230, 1240, 1250, 1270N, 1430, 1440, 1450, 1470N, P2500, MFC8300J, 8500J, 8600, 9650, 9660, 9600J, 9750, 9760, 9850, 9860, 9870, 9880, 9880J	\$99
TN-7600	HL-1650, 1670N, 1850, 1870N, 5030, 5040, 5050, 5070N, MFC 8420, 8820, 8820DN, DCP 8020, 8025D, 8025DN	\$109

Photo Paper

FujiFilm 6" x 4" Photo Paper 20sheets	\$12
FujiFilm 6" x 4" Photo Premium Paper 20sheets	\$15
FujiFilm 6" x 4" Photo Paper Premium Plus 20sheets	\$19
Epson 20 Sheet photo paper	\$20



*Please check for more cartridge and paper selections in store by calling us or email to cpl@cpl.net.au

USB cables

USB plug a-a 3m/5m	\$12/15
USB extension a-a m-f 2m/3m/5m	\$10/12/15
USB a-b mini 2m/3m	\$12/15
USB2 printer cable 1.8m/3m/5m	\$10/12/15
USB2 Plug a-a 2m/3m/5m	\$10/12/15
USB link/bridge cable for networking	\$35
USB data cable for connet 2 PCs	\$30
USB a to b mitsumi 2m	\$15



Network Cables

RG58 cable BNC for 10/100 Ethernet	
2m/3m/5m/10m/15m/20m/30m	\$7/\$8/\$10/\$15/\$20/\$25/\$30
Cat6 for 10/10/1000 Ethernet Straight Cable	
2m/3m/5m/10m/15m/20m	\$7/\$8/\$10/\$15/\$20/\$25
Cat6 for 10/10/1000 Ethernet Cross-over Cable	
2m/3m/5m/10m/15m/20m	\$7/\$10/\$10/\$15/\$20/\$25



Modem Cables

Null Modem cable db25f-f 2m	\$10
Null modem cable db25f-f 5m	\$15
Null modem cable db9f-db9f 2m	\$10
Null modem cable db25m-9f/25f 1m	\$10



Parallel Cables

IEEE 1284 Parallel printer cable 1.8m/5m/10m	\$5/\$8/\$12
IEEE 1284 bi-tronic Parallel printer cable 1.8m/5m	\$10/\$20
Parallel cable DB25m-DB25m 1.8m/3m/5m/10m/20m	\$5/\$8/\$10/\$15/\$20
Parallel cable DB25m-DB25f 1.8m/3m/5m/10m/20m	\$5/\$8/\$10/\$15/\$20
Parallel cable DB25f-DB25f 10m	\$15
RC3906 DB25-HPC36M 2M for HP prt	\$19



Power Cables

Internal power splitter cable 2x5.25"-1x5.25"m	\$5
Internal power splitter cable 2x3.5"-1x3.5"m	\$5
P4 4-pin converter	\$5
Internal ATX power extension	\$10
PS/2 power cable	\$10
IEC PC-Monitor cable	\$5
PC power cable 1.8m/5m	\$5/\$10
3pin main plug to 2 x IEC female	\$15
IEC male to 2 x IEC female	\$15
Powersupply converter 20pin to 24pin	\$15
Powersupply converter 4pin to 8pin	\$12



PS/2 Cables

PS/2 extension cable MD6 m-f 2m/3m/5m/10m	\$5/\$8/\$10/\$12
PS/2 extension cable MD6 m-m 2m/3m/5m/10m	\$5/\$8/\$10/\$12



Laplink Cables

Serial laplink cable db25m/db9f m-m 2m	\$12
Serial laplink cable 2x db25f/db9f 2m/3m/5m	\$8/\$10/\$12



DVI Cables

DVI-D dual link extension m-m/m-f 2m	\$25
DVI-D single link m-m 2m	\$15
DVI-I dual link extension m-m/m-f 2m	\$25
DVI-I single link m-m 2m	\$20
DV17m to VGA hd15f	\$15



Audio Cables

CD-Rom audio cable	\$2
DVD-Rom digital 2 pin cable	\$5
Optical square-square digital cable	\$15
Optical square-round 3.5mm digital cable	\$15
Optical round3.5mm - round 3.5mm digital cable	\$15
Audio 3.5 stereo plug 2m	\$5
speakers extension 3.5mm m-f	\$5



IDE Cables

IDE flat ATA33 45cm	\$5
IDE flat ATA100/133 45cm/80cm	\$10/\$15
IDE round ATA100/133 60cm/75cm/85cm	\$18/\$20/\$25
Neon-blue round IDE 75cm 3connector	\$45



SATA Cables

Serial ata power cable 12cm RC-5031	\$8
Serial ata data cable 60cm RC-5032	\$12



SCSI Cables

LVD external 68pin 2m HD M-M	\$99
Internal LVD terminator HD68F	\$45

MIDI Cables

MIDI Cable 120cm	\$22
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FDD Cables

Floppy cable 55cm	\$5
Floppy cable extension	\$10
Floppy round cable 50cm	\$15
Neon-blue round 48cm	\$29



VGA Cables

VGA monitor cable HD15 m-m 2m/5m	\$5/\$10
VGA monitor extension cable HD15 m-f 2m/3m/5m	\$5/\$8/\$10
RGB monitor cable HD15-3xBNC 1.8m	\$19
RGB monitor cable HD15-4xBNC 1.8m	\$15
RGB monitor cable HD15-5xBNC 1.8m	\$25
Monitor splitter cable 1xHD15m-2xHD15f 2m	\$12
High quality monitor cable m-f with filter 2m/5m/10m/20m/30m	\$12/\$15/\$25/\$45/\$55
High quality monitor cable m-m with filter 2m/5m/10m/20m/30m	\$12/\$15/\$25/\$45/\$55
S-video male to RCA female adaptor	\$8
S-video male to male cable 5m	\$12
S-video to 2x RCA cable 5m	\$12



IEEE1394 Cables

IEEE 1394 6p-6p 1.8m/5m	\$12/19
IEEE 1394 6p-4p 1.8m/5m	\$12/19
IEEE 1394 4p-4p 1.8m/5m	\$12/19
Laser 1394 3in1 6F	\$35



Serial Cables

Serial extension cable db9m-f 2m/5m	\$5/\$9
Serial cable db9m-db9m 2m	\$5



Joystick Cables

Joystick extension cable DB15 m-f 2m	\$10
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Adaptor

USB to parallel adaptor	\$35
USB to serial adaptor	\$35
USB to PS/2 converter 2x PS/2 ports	\$35
2 ports printer card PCI	\$35
2 ports serial card PCI	\$35
3 ports 1394 card PCI	\$35
3.5" USB2 & 1394, PS/2 panel	\$25
5.25" USB2 & 1394, PS/2 panel	\$45
Coolermaster aerogate 2	\$69
Coolermaster musketeer system detector	\$65
Keyboard AT to PS/2 adaptor	\$5
Keyboard PS/2 to AT adaptor	\$5
Mouse PS/2 to serial adaptor	\$5
Notebook HDD to IDE adaptor kit	\$19
USB to 2 game ports	\$35



Windows XP Home oem

With Windows XP Home Edition, you have the freedom to experience all that your computer and the internet have to offer. With genuine speed and serious stability, this is the operating system home users have been waiting for.

**oem software purchase with system only*

\$139



Windows XP Pro oem

For businesses of all sizes, and for home users who demand the most from their computing experience, Windows XP Professional includes all the features of Windows XP Home Edition, as well as premier security and privacy features, advanced recovery options, an improved ability to connect to large networks and more.

**oem software purchase with system only*

\$209



Windows XP Pro X64 oem

Windows XP Professional x64 runs on x64 processors. 64-bit native applications can deliver more data per clock cycle, making them run faster & more efficiently. It supports up to 128MB RAM & 16 terabytes of virtual memory, enabling applications to run faster.

**oem software purchase with system only*

\$209



Windows XP Media Center 2005 oem

Windows XP Media Center Edition 2005 combines a powerful home PC with a digital entertainment system. It's the most advanced version of Windows you can get for a home PC, and lets you create and manage all your digital entertainment with one remote control.

Remote Control: \$69
\$179



Vista Home Basic oem

Windows Vista Home Basic is the edition of Windows for basic home computing needs. If you only want to use your PC for tasks like browsing the Internet, using e-mail, or viewing photos, then Windows Vista Home Basic may be the right edition for you.

**oem software only purchase with system*

\$139

Windows Vista



Vista Home Premium oem

Windows Vista Home Premium delivers the productivity and entertainment that you need from your PC at home or on the go. It includes Windows Media Center, and that makes it easy to enjoy your digital photos, TV and movies, and music. Plus, you'll have the peace of mind of knowing that your PC has a whole new level of security and reliability.

**oem software only purchase with system*

\$169

Windows Vista



Vista Business oem

Windows Vista Business is the first Windows operating system designed specifically to meet the needs of small businesses. You'll empower your entire business to work more efficiently with a stunning and improved, simple-to-use interface that makes it easier to search and find the information you need quickly and easily, both on your PCs and on the web.

**oem software only purchase with system*

\$219

Windows Vista



Vista Ultimate oem

Windows Vista Ultimate offers all of the features found in Windows Vista Home Premium, including Windows Media Center, Windows Movie Maker with high-definition support, and Windows DVD Maker. It also offers all of the features found in Windows Vista Business, including business networking, centralized management tools, and advanced system backup features. And Windows Vista Ultimate has all of the new security and data protection features that help take Windows Vista to a whole new level of dependability.

**oem software only purchase with system*

\$279

Windows Vista



Office 2003 Basic oem

Microsoft Office 2003 Basic:

- Includes Word 2003, Excel 2003 & Outlook 2003
- Reduce document sharing or unintended use by setting an expiration date
- Helps to protect documents from being unintentionally changed by using Word Formatting & Editing Restrictions

\$239



Office 2003 SBE oem

Microsoft Office 2003 SBE:

- Includes Word, Excel, Outlook with Business Contact Manager, PowerPoint, and Publisher 2003
- Uses familiar, integrated, and easy-to-use software, creates impressive sales and marketing materials in-house, and handles e-mail and share information efficiently and securely.

\$339



Office 2003 Pro oem

Microsoft Office 2003 Pro:

- Includes Word, Excel, Outlook with Business Contact Manager, PowerPoint, Publisher, Access 2003
- enables people to: Manage customers and create impressive marketing materials, Manage e-mail and share information efficiently and securely.

\$419



Office 2003 Student & Teacher Edition

Microsoft Office 2003 Student & Teacher Edition includes Word, Excel, Outlook & PowerPoint 2003. It displays twice the content as previous versions of Outlook; Manipulates & analyses XML business data.

\$169



Office Basic 2007 MLK*

Microsoft Office Basic 2007 is the essential, pre-installed software suite for homes and small businesses with new computers that enables you to quickly and easily create great-looking documents and spreadsheets and manage e-mail. The latest release features a new streamlined user interface that exposes commonly used and familiar commands, enhanced graphics and formatting capabilities that enable you to create high-quality documents, new time management tools to help manage your schedule, and more reliability and security.

** MLK: Medialess License kit, purchase with system only*

\$249



Office SBE 2007 MLK*

Office Small Business 2007 is a complete set of productivity and contact management tools to help you accomplish routine tasks quickly, efficiently manage customer and contact information in one place, and produce professional-quality marketing communications and campaigns in-house. Powerful and easy-to-use suite of productivity and contact management software features new tools to help you save time, stay organized, and deliver better customer service.

** MLK: Medialess License kit, purchase with system only*

\$339



Office Pro 2007 MLK*

Microsoft Office Professional 2007 is a complete suite of productivity and database software that will help you save time and stay organized. Powerful contact management features help you manage all customer and prospect information in one place. Develop professional marketing materials for print, e-mail, and the Web, and produce effective marketing campaigns in-house. Create dynamic business documents, spreadsheets, and presentations, and build databases with no prior experience or technical staff. You will learn new features rapidly using improved menus that present the right tools when you need them.

\$439



Office Pro 2007 Academic

Office Professional 2007 helps professionals work faster, stay organized, and manage contacts and customer information in one place. Office Professional 2007 academic applications included:

- Word 2007
- Excel® 2007
- PowerPoint® 2007
- Outlook w/Business Contact Manager
- Publisher
- Access™

\$249



Norton Anti-Virus 2007

Symantec's Norton AntiVirus™ 2007 is the world's most trusted antivirus solution.* It removes viruses, worms, and Trojan horses automatically—without interrupting your work. New Norton™ Internet Worm Protection blocks certain more sophisticated worms before they enter your computer. Norton AntiVirus can also detect spyware and other non-virus threats.

\$39



Norton Internet Security 2007 oem

Symantec's Norton Internet Security 2007 provides essential protection from viruses, hackers, and privacy threats. Norton™ Personal Firewall keeps personal data in and hackers out. And Norton™ Privacy Control, AntiSpam™, and Parental Control safeguard you from other common online risks.

\$49



Norton Ghost V10

Creates a complete backup of a hard drive; easy to use, even for novices; supports encryption. Norton Ghost 10's usability and feature enhancements include data encryption and better tools for managing backed-up data. These make it a unique and powerful backup application, even for novice users.

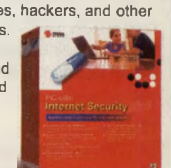
\$99



PC Cillin Internet Security 2007 oem

Trend Micro™ PC-cillin™ Internet Security provides comprehensive and easy to use protection from viruses, hackers, and other internet-based threats. Its new advanced features go far beyond standard antivirus and firewall protection.

\$39



Macfee Virus Scan 2007

The award-winning McAfee VirusScan—trusted by millions worldwide—automatically scans your email, attachments, shared disks and downloads, then immediately starts to clean or quarantine infections. McAfee VirusScan automatically checks for virus updates* whenever you connect to the Internet, including spyware.

\$29

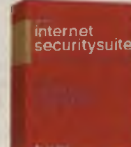


Macfee Internet Security 2007 oem

McAfee Internet Security Suite 2007:

- Prevents viruses from infecting your PC
- Prevents hackers from invading your PC
- Stops unwanted, inappropriate and malicious email
- Protects against spying and pop-up ad programs
- Helps stop identity theft

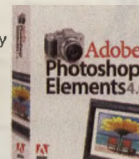
\$39



Adobe Photoshop Elements 5

Adobe® Photoshop® Elements 5.0 combines power and simplicity to help you do it all. Edit and enhance your photos by fixing common flaws instantly or using advanced options for more control.

\$159



Nero 7 Premium Retail

Nero 7 Premium enables you to experience your digital media in completely new and innovative ways. With the addition of a Nero Home—media manager, you can now have the complete PC and TV experience.

\$129



Asus MyPal A636

- 416MHz Intel XScale Processor
- Microsoft Windows Mobile 5.0 (Pocket PC)
- 3.5" Brilliant Transflective TFT LCD 65K, 16-bit Display QVGA
- 128MB Flash ROM and 64MB SDRAM
- 122mm x 73.2mm x 18.8mm/19.45mm
- Weight: 186g (with battery)



with GPS \$769
\$539

HP IPAQ HX2190

- HP IPAQ HX2190 pocket PC,
- Intel PXA270 312MHz Processor, 128MB ROM, 64Mb RAM, 3.5" Transflective QVGA TFT, Bluetooth, CF/SDIO, Windows Mobile 5.0 Premium Edition. Dimensions: 119.4mm (H) x 76.6mm (W) x 16.3mm (D), Weight: 164.4g.



\$469

HP IPAQ HX2490

- HP IPAQ HX2490 Pocket PC
- Intel PXA270 Processor 520MHz, 128MB ROM, 64Mb RAM, 3.5" Transflective QVGA TFT, Intel 802.11b, Bluetooth, CF/SDIO, MS Windows Mobile 5.0 Premium Edition
- Dimension: 119.4 x 76.6 x 16.3 mm / Weight 164.4 g



\$559

HP IPAQ HX2790

- HP IPAQ HX2790 Pocket PC
- Intel PXA270 Processor 625MHz, 192Mb ROM, 64Mb RAM, 3.5" Transflective QVGA TFT, 802.11b, Bluetooth, CF/SDIO, Biometric Reader, Windows Mle 5 Premium Edition
- Dimension: 119.4 x 76.6 x 16.3 mm / Weight 164.4 g



\$729

HP IPAQ RW6828

- Intel PXA272 416 MHz
- 64MB RAM & 128MB flash ROM
- 2.7" transmissive QVGA (240x320 pixels) TFT LCD with 18-bit
- Dimension: 102 x 58
- 19.5 mm, Weight: 140g
- Bluetooth devices



\$829

HP IPAQ HW6515

- Intel® PXA270 Processor 312MHz
- Up to 55MB user available memory
- Display: Transflective TFT QVGA color with LED backlight with power save mode
- Built-in camera, GPS receiver, bluetooth
- MS Windows Mobile 2003
- 118mm x 71mm x 18mm, Weight: 165g



with GPS \$959
\$829

HP IPAQ HW6965

- Intel PXA270 Processor 416 MHz
- 45MB available for persistent user storage
- 64 MB SDRAM
- Display: 75 mm Transflective TFT color
- Camera 1.3 Mega pixels
- Win Mobile 5.0 software
- 118 x 71 x 18 mm, Weight 179.45 g



with GPS \$1199
\$1079

O2 XDA Atom

- Intel PXA272 416MHz; MEM: 64MB RAM, 128MB Flash ROM; DISPLAY: 2.7 inch TFT LCD Display with touch panel, 240 x 320 Res, Supports 262K Colors;
- CAMERA : Color 2-mega-pixel CMOS camera, preview mirror for self portrait; White LED strobe flash, Support image & video capture; 58x102x18.5 mm, Weight: 140g



\$899

Mitac Mio P350

- Cpu: Samsung 2440 400MHz
- Video Display: 3.5" Transmissive LCD, anti-glare, Brightness 350nits
- Memory: ROM 128 MB Nand flash, 64 MB SDRAM
- GPS Module: Built in GPS module
- Input Method: Stylus / On-Screen Keyboard/ Handwriting Recognition
- Speaker: Built-in loud-speaker x 1



\$479

Mitac Mio P550

- Cpu: Samsung 2440 400MHz
- Video Display: 3.5" Transmissive LCD, anti-glare, Brightness 350nits
- Memory: ROM 128 MB Nand flash, 64 MB SDRAM
- GPS Module: Built in GPS module
- Touch Panel: Resistive type touch panel
- Input Method: Stylus / On-Screen Keyboard/ Handwriting Recognition



\$679

TOMTOM ONE GPS Navigation

- Processor: 266MHz
- Memory: 256MB
- Screen: 3.5", 320 x 240 full TFT Color LCD
- Dimension : 110x89x34mm
- Weight: 260g



\$629

TOMTOM GO 910 GPS Navigation

- Processor: 400 MHz ARM920T
- Capacity: 64MB RAM
- Storage: HDD (20 GB, >10 GB)
- Screen: 4 inch, 480 x 272 TFT, 64,000 colours
- Dimension: 112x81x66
- Weight: 340g



\$1069

Laptop Accessories

Asus ADA-65W Power Adapter

- Notebook Models Suited : A6BNe, A35L, A35N, A38N, A38G, M6BR, M6Sne, V68V, M6A, W3N, W1Sna, W1SGC
- Input Voltage 100-240VAC, 50/60Hz Universal
- Output Voltage 19VDC,



\$79

Asus Car Charger for Asus NB CARADA-A2

- Asus car charger, Input Voltage 12VDC, 50/60Hz Universal & Output Voltage 19VDC, 3.7Amps, 70Watts, 3 Pin Connector, suits: A6BNe, A35L, A35N, A38N, A38G, M6BR, M6Sne, V68V, M6A, W3N, W1Sna, W1SGC, M52N, S52N Series.



\$109

IBM Thinkpad Port Replicator II (74P6733)

- Apply for all Thinkpad X, T, R and A series models except Re series
- Provide easy cable management
- Helps maintain the mobility afforded by a Thinkpad system
- Offers pass-through connection for Gigabit Ethernet, USB2.0 and DVI ports



\$179

IBM Thinkpad Mini Dock With Power Cord(39T4821)

- Pass-through (replication) of ThinkPad notebook ports including Gigabit ethernet, modem, 4-port USB 2.0 hub, DVI, VGA, serial, parallel, PS2-keyboard/mouse, diskette drive, audio line-in and line-out.
- Supports all ThinkPad X,T,R and A Series models.



\$299

Antec Notebook Cooler

- Reduce heat-related instability
- USB-powered, Low power consumption
- 2 Double ball-bearing fans for reliability.
- Quieter than a whisper



\$59

Kensington Laptop Desktop USB Stand 60148

- Space saving, money-saving solution eliminates the need for extra monitor
- Built-in 4 port USB 2.0 hub provides one-time connection for computer accessories.



\$129

Kensington Microsaver Sec Cable Lock 73P2582

- Aircraft-grade steel and Kevlar brand fiber for powerful protection
- Compatible with ThinkPad notebooks and docking solutions, ThinkCentre desktops, ThinkVision monitors and IBM Projectors.



\$69

Kensington Twin Slim Microsaver Lock

- Suitable for Toshiba Satellite Pro/Tecra/Portege series • Designed for use with Kensington security slot. It offers the strongest protection with its two patented T-bar locks. It is long enough to comfortably secure two pieces of computer equipment.



\$129

FSP Universal Notebook Power Adapter

- Providing power solution for your mobile computing needs, available in: 65W, 90W, 120W



NB65 \$49
NB90 \$69
NB120 \$99

Toshiba Dobby Oxford Carry Case

- Toshiba Dobby Oxford Notebook carry case, designed in stylish Dobby Oxford material with full padded computer section. Front pocket. Computer Capacity = 34x30.5x5.5cm.



\$79

Toshiba Advanced Port Replicator III+ (PA3474A)

- Built-in 10/100 RJ-45 Ethernet port
- Built-in RJ11 Modem port
- One 9-pin serial port & 4 USB2.0 ports
- Connector for external VGA & DVI
- PS/2 port, Parallel printer port,
- Kensington lock and security key



\$299

Toshiba Defcon Security Lock

- Utilises the security slot already built into many Toshiba portable computers.
- Has a 1.8m galvanised steel cable, and any attempts to remove it, will noticeably damage the computer, preventing theft and resale.



\$59

Skymaster KVM Switch 2 or 4 Ports

- Support Win 95/98/2000/ME/XP/NT, Unix, Linux
- Hot Plug - add or remove connected PCs for maintenance without powering down the KVM Switch or PCs.
- Very high video quality - up to 1920
- 1440



\$39/59

Aten USB KVM Switch 2 or 4 Ports

- Aten 2/4ports Auto USB KVM Switch:
- One USB keyboard, USB mouse, and VGA monitor controls two computers. Non-powered
- Supports multimedia USB keyboards
- Audio jack provided for speaker sharing



\$69/99

D-Link KVM Switch 2 or 4port DKVM-2K/ 4K

- Supports Up to 2048 X 1536 Resolution
- Includes Two 6' Standard KVM Cables
- Convenient Select Button and Hot-Keys
- Plug and Play

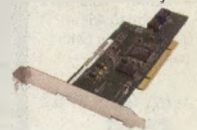


DKVM-2K 2port
DKVM-4K 4port

\$59/99

Adaptec AAR 1210SA Serial ATA RAID Card

- The Adaptec Serial ATA RAID 1210SA provides cost-effective, high-performance storage connectivity and data protection for desktops, workstations and sub-entry servers.



\$89

Adaptec AAR 2420SA Serial ATA RAID Card

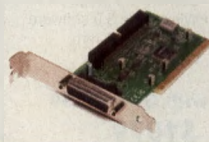
- Adaptec Serial ATA II technology delivers data transfer rates with 3 Gb/s while also supporting 1.5 Gb/s (SATA I). The Adaptec Serial ATA II RAID 2420SA card is a four-port controller that supports SATA or SATA II direct attached disk drives. It features standard RAID 0, 1, and 10 as well as an optional Advanced Data Protection Suite.



\$499

Adaptec AVA 2906 SCSI Controller

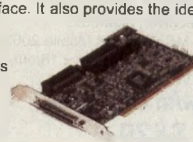
- The Adaptec SCSI Card 2906 protects your SCSI peripheral investment by providing the same internal and external connections previously available with built-in Mac SCSI.



\$85

Adaptec ASC29160 Ultra SCSI Controller

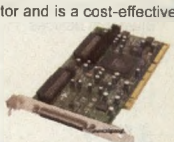
- The Adaptec SCSI Card 29160 is tailored for entry to mid-range server environments. It delivers the maximum throughput for a single channel Ultra160 SCSI card by using a 64-bit PCI interface. It also provides the ideal connection to Ultra160 SCSI (LVD) hard disks and devices.



\$299

Adaptec ASC29320 Ultra SCSI Controller

- The Adaptec SCSI Card 29320A-R is a half-size, 64-bit 133 MHz PCI-X, single-channel Ultra320 SCSI card with integrated HostRAID. The Adaptec 29320A-R includes a legacy SCSI connector and is a cost-effective RAID 0, 1 and 10 solution.

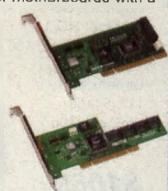


\$329

PROMISE FastTrak TX2300 / TX4310

- Cost-effective RAID 0/1 controller with SATA 3Gb/s drive support for motherboards with a PCI interface, 32-Bit / 66 MHz.

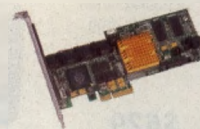
TX2300
2ports, Raid 0/1
TX4310
4ports, Raid 0/1/10



\$129/229

PROMISE EX8350 8port SATA2 PCIE

- 8-Port Serial ATA (SATA) RAID controller with 3.0 Gb/s per port
- PCI-Express x 4 Host Bus Interface
- Support RAID levels 0, 1, 5, 6*, 10, and JBOD
- Linux open source driver support



\$729

Thecus N2050 Personal Backup Device

- Thecus N2050G Personal Backup Device, Green or Blue Color, 2x SATA RAID Bays, SATA/USB dual mode external interfaces, PCI eSATA Card not included



\$209

Thecus N2100 Personal Backup Device

- Thecus N2100 IP FTP/Web Photo/iTunes Server Storage Appliance, Pearl or Black Color, 2x SATA RAID Bays, 128MB DDR, 3x USB2.0, Dual Gigabit Ethernet, AC adapter



\$469

Bluetooth USB Dongle Class 2

- Wirelessly connect your Bluetooth-enabled device to your PC
- Full speed Class 2 Bluetooth operation
- Operation range - 100 metres (33ft) range
- Data transfer rate up to 723Kbps
- Supports Windows 98/ME/2000/XP



\$35

D-Link USB Bluetooth Adaptor DBT-122

- Connect with Bluetooth Enabled Devices
- Works with PC & Mac
- Seamless Wireless Personal Area Network (PAN) Connectivity
- Operation range - 100 metres (33ft) range



\$59

Skymaster PCI ATA133 IDE RAID Controller

- PCI Bus Master DMA Transfer Rate up to 133MB/s
- Supports 4 IDE Hard Disks with 133MB/s Transfer Rate
- Supports RAID 0, 1, 0+1

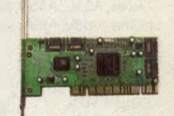


Non Raid IDE Controller: \$39

\$39

Skymaster PCI Serial ATA 2/4 port Controller

- Dual independent DMA channels with 256KB FIFO per Serial-ATA channel, transfer rate up to 1.5Gb/s
- Serial ATA Specification Revision 1.0 compliant
- Internal Serial-ATA port x 2



2port / 4port
\$39/49

PCMCIA to USB2 or 1394 Adaptor

- 3 Ports USB 2.0 or 1394 CardBus
- Provides 3 External Ports to Laptop
- Driver Supports: Windows 98 / ME / 2000 / XP



\$35

PCMCIA to USB2 & 1394 Combo Adaptor

- PCMCIA CardBus Interface with Power Management
- Provides two USB Root ports with high-speed 480Mbps
- Provides one 1394 port and one mini-1394 port with 400, 200 and 100 Mbits/s traffic



\$59

Skymaster USB2.0&1394 COMBO PCI Card

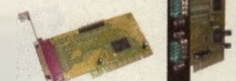
- Chipset: 1394-VIA VT6306, USB 2.0-VIA VT6202
- Speed: 1394 Asynchronous and Synchronous data transfer 400/200/100Mbps USB each port 480Mbps
- O/S Supports: Win 98SE/ME, Win 2000/XP



\$39

Skymaster 2 ports Parallel / Serial PCI Card

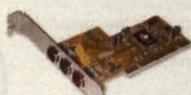
- Total Plug and Play, slide bars PCI 32bit
- Give two extra two parallel or serial ports to your PC
- Drivers for Windows XP/2000/NT, 98/95 and Linux



\$29

Skymaster 1394 Adaptor

- VIA VT6306 chipset
- Easy plug-n-play connectivity and set-up
- IEEE 1394 data transfer rate up to 400 or 800Mbps
- Supports Windows 98SE, ME, 2000/XP and Mac OS



Firewire
400 / 800
\$29/79

AL TECH Portable MPEG4 Player MG-25

- An entertainment product of tomorrow. This portable media player allows DivX, MPEG4, DAT, Xvid, MP3, OGG, WMA and JPEG play back from any 2.5" notebook sized hard disk. A 2.5" notebook hard disk is required.



\$139

AL TECH Portable Media Player ALT-MG35

- Mediagate MG-35 is a high-performed, DMA with 3.5-inch HDD inside. It can be configured in collaboration with web-based movie distributor as a set-top box or media gateway to access, play and/or download the legal movies from the website directly without home PC.



\$199

AL TECH Wireless Portable Multimedia Player MG-350HD

- Watch High Definition movies on Standard Definition TVs
- Built-in hardware zoom
- Featuring NDAS networking technology
- 11g wireless connection and 10/100 Ethernet port
- Ability to wirelessly stream media without a HDD



\$309

D-Link DCS-900

IP Camera

- Web-based Remote Access Using Any Java Enabled Web Browser
- 10/100Mbps Fast Ethernet Connection
- Manual, Motion Triggered, or Scheduled Recording Options



\$239

D-Link DCS-G900

Wireless IP Camera

- Network Surveillance Camera suitable for the Home / SOHO - 10/100Mbps Fast Ethernet Port & IEEE 802.11g (54Mbps) Wireless LAN
- 640x480 Video Resolution • Up to 30 Frames Per Second Video



\$259

D-Link DCS-3220

IP Camera with 2-Way Audio

- Monitor Your Home or Office Over the Internet
- Listen and Talk with 2-Way Audio1
- 4x Digital Zoom2 for Close-up Viewing
- Built-in Motion Detection with E-mail Notification



\$579

D-Link DCS-3220G

Wireless IP Camera

- First 802.11g Wireless Internet Camera
- 2-Way Audio1 and Built-in Motion Detection with E-mail Notification
- 4x Digital Zoom2 for Close-up Viewing



\$699

D-Link DCS-5300

IP Camera

- CCD Sensor for Superior Quality Video
- Built-in Microphone for Audio Monitoring and Recording
- High Quality MPEG-4 Short Header Mode Compression
- Built-In Motion Detection & Email Notification



\$699

D-Link DCS-5300G

Wireless IP Camera

- First-to-Market 802.11g Wireless IP Camera
- Built-in Microphone for Audio Monitoring and Recording
- Built-in Motion Detection with E-mail Notification
- Connection to TV or VCR for Recording



\$849

D-Link DCS-6620

IP Camera

- Motorized Pan/Tilt/Zoom
- User-Selectable Compression Codec - MJPEG and MPEG-4
- 2-Way Audio Support
- Extreme Low Light Sensitivity
- Smooth Video Recording of Up to 30 FPS



\$1149

D-Link DCS-6620G

Wireless IP Camera

- 802.11g Wireless Connectivity
- User-Selectable Compression Codec - MJPEG and MPEG-4
- 2-Way Audio Support
- Extreme Low Light Sensitivity
- Smooth Video Recording of Up to 30 FPS



\$1369

Voice Over IP

LINKSYS PAP2 Phone Adapter with 2 Ports

- Enables high-quality feature-rich telephone service through your cable or DSL Internet connectionable or DSL Internet connection.
- Two standard telephone jacks for phones or fax
- Clear sounding voice service



\$89

LINKSYS RT31P2 VOIP Broadband Router

- Three 10/100 Ethernet ports.
- Two voice port for analog phones or fax machine.
- Supports Quality of Service to maximise VOIP
- Web based configuration, remote firmware upgrade.



\$149

LINKSYS WRT54GP2 Wireless-G Router

- All-in-one Internet-sharing Router, 3-port Switch & 54Mbps Wireless-G Access Point
- Two standard phone jacks
- High security: Wi-Fi Protected Access, wireless MAC address filtering, powerful SPI firewall



\$169

LINKSYS WAG54GP2 Wireless-G ADSL Gateway

- High-speed ADSL2+ Modem, Internet-sharing Router, 4-Port Switch and Wireless-G Access Point in one box
- Wireless-G ADSL Gateway with 2 Phone Ports



\$209

NETGEAR TA612V Broadband Voice Adapter

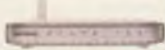
- Turns your Broadband Internet Service into a Telephone
- 2 ports to connect analogue phones & fax
- Shares Internet connection via Ethernet ports & Broadband modem
- Prioritises voice traffic for optimum QoS
- Call Features include: Called ID, Call Waiting & Voicemail



\$119

NETGEAR WGR613V Wireless Router with Phone Adaptor

- 5-in-1 device - Voice-over-IP (VoIP) phone adaptor, wireless access point, Ethernet switch, firewall, and router
- Money saving - use VoIP to reduce your phone bill
- Simple to set up an use



\$169

NetComm V300 Two Port VoIP Adaptor + Router

- NetComm's V300 VoIP Telephone Adaptor/Router has been designed for residential and small business users to deliver predictable real-time voice quality over the Internet. It connects directly to any broadband modem and service (Cable or DSL) which supports VoIP.



\$159

NetComm NB9W MyNet Gateway

- The NB9W MyNetGateway delivers an all-in-one Integrated Access Device. It includes an ADSL2+ modem, 4-port Layer 3 Quality of Service (QoS) router, 2x FXS ports for VoIP equipment, 1x FXO port for PSTN lifeline backup and 802.11g wireless in one device!



\$229

BILLION BiPAC 6404VGP VoIP Firewall Router

- Broadband sharing with fast Ethernet switching • Voice-over IP - compliant with SIP standards • Two FXS ports for connecting to regular telephones
- One FXO port for voice calls via PSTN Fixed-line • Gateway "Least Cost Routing" support



\$179

BILLION 7401VGPM VoIP / ADSL2+ / Router with 4-port Switch

- Voice over IP compliant with SIP standard
- High speed Internet Access with ADSL2/2+
- SOHO Firewall Security with DoS Prevention and SPI



\$199

BILLION 7404VGPM VoIP / ADSL2+ Firewall Router with PSTN

- Voice over IP compliant with SIP standard
- High speed Internet Access with ADSL2/2+
- Gateway - Least Cost Routing
- SOHO Firewall Security



\$259

BILLION 7404VGOM VoIP / ADSL2+ VPN Firewall Router with PSTN

- Voice over IP compliant with SIP • Gateway • VPN with powerful 3DES
- High speed Internet Access with ADSL2/2+
- SOHO Firewall Security with DoS Prevention and SPI



\$299

BILLION BiPAC 7300 ADSL2+ Firewall Router

- Easy to set up to surf the net! Billion's BiPAC 7300(G) series is an all-in-one compact package of ADSL2+ router perfectly designed for home and SOHO users to enjoy the mobility and faster speed when using ADSL Internet connection.



\$69

BILLION BiPAC 7300G ADSL2+ Firewall Router

- Billion's BiPAC 7300(G) series is an all-in-one compact package of ADSL2+ router. It lets you access high-speed ADSL Internet connection, even faster with advanced ADSL2+ capability with downstream rate up to 24Mbps



\$139

BILLION BiPAC 7402LM ADSL2+ / Router with Switch

- High-speed Internet Access with ADSL2+ up to 24Mbps
- SOHO Firewall Security with DoS Prevention and SPI
- Parental Control with URL Blocking and Packet Filtering



\$159

BILLION 7402R2M ADSL2+VPN Firewall Router

- VPN with 3DES is up to 3.5 Mbps
- SOHO Firewall Security with DoS Prevention and SPI
- Parental Control with URL Blocking and Packet Filtering
- High-speed Internet Access with ADSL up to 8Mbps



\$179

POS Equipment

PSC QS2500 Scanner

For retail, office, and light-industrial applications, the QS2500's 200 scans-per-second linear imager scan engine provides snappy reading performance and a mid-range depth-of-field.



PS/2 or USB
\$199/219

PSC QS1000 Scanner

Sleek Design and Powerful Performance. A Winning Combination in an Affordable Bar Code Scanner. The QS1000 Scanner offers you all the benefits of laser scanning at what used to be CCD prices.



PS/2 or USB
\$269/289

PSC QS6500 Scanner

Fast, Ergonomic Scanning of All Supported Symbolologies. The PSC QS6500 includes addressive scanning performance, an ergonomic feel, excellent field depth and fast 1D and PDF bar code reading.



PS/2 or USB
\$329/349

PSC PSSR-0000

PowerScan Scanners

Even in the most harsh working environments, you can depend on the PowerScan scanner to keep on working. PSSR-0000, standard range, undecoded.



PS/2 or USB
\$639/659

DENSO GT10 Bluetooth Smart Scanner

- Bluetooth 70cm scan distance
- Long range CCD
- Fast reading and decoding
- Ultra bright scanning beam
- Multi colour LED
- Vibrate and beep functions



\$799

DENSO Portable Scanner G8044

- Denso Contact Scan model up to 25cm, 4 Mb RAM
- Large liquid crystal display of 128 x 64 dot
- Wide key pitch 13.7mm



\$959

Zebra LP2844 Direct Thermal Barcode Label Printer

Reliable desktop printer featuring USB & optional network interfaces



\$559

Zebra TLP2844 Thermal Transfer Barcode Label Printer

Reliable desktop printer featuring USB & optional network interfaces



\$699

POSIFLEX FPP5600DP

Impact Receipt Printer
Paper Tear Bar, 42 column Dot Matrix, Approx 3.5LPS, 20kb input buffer. Up to 3 ply print, ESC/POS Command Compatible.
Paper Roll: 76x76mm
box of 24: \$29



\$359

POSIFLEX FPP7000U

Thermal Receipt Printer
High Speed, up to 180mm per sec, Auto Paper Cutter, Drop & Load Paper loading, Stores Graphic Logo, USB Interface.



\$559

POSIFLEX FCR4100

Cash Drawer
Innovative Screwless Secured Design, three position lock, Cheque slot, supplied with 1 metre modular connector (RJ12) cable to connect Posiflex, Epson, Star, Axiohm & current Citizen printers.



\$159

POSIFLEX FCR4101

Cash Drawer
Smart externally powered POS cash draw, serial and parallel pass-through capabilities, include plug-in external power supply, 1.8m cable and cash insert.



\$279

POSIFLEX FCD2860P

Barcode Scanner
CCD contact technology, 80mm reading aperture, 0-30mm scanning distance, Auto discrimination, Manual trigger, Beeper & LED indicator.



PS/2 or USB
\$159/179

POSIFLEX FCD3830P

Barcode Scanner
CCD long range technology, ergonomic and light weight design, wide reading aperture, 0-300mm scanning distance, Auto discrimination, Manual trigger, Beeper & LED indicator.



PS/2 or USB
\$199/219

Symbol LS-2208 Laser Scanner

The high-value LS2208 hand-held scanner offers superior performance, excellent reliability and user-friendly ergonomics to create a more productive mobile environment.



\$319

Symbol LS-9203 Omni Directional Bench Scan

The LS9203's high-performance handheld and presentation scanning capability enables point-of-sale employees to work faster and more accurately.



\$429

EPSON ETMU220D

Impact Receipt Printer

Epson Impact receipt printer, 9-pin dot matrix, includes power cable and data cable, USB or parallel interface.

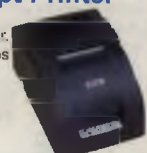


\$429

EPSON ETMU220B

Impact Receipt Printer

Epson Impact receipt printer, auto paper cutter, 9-pin dot matrix, includes power cable and data cable, USB or parallel interface.



\$599

EPSON ETMT88

Thermal Receipt Printer

Epson thermal receipt printer, high speed up to 150mm per sec, auto paper cutter, 42/56 column, drop & load paper loading, USB or parallel interface.



\$699

EPSON ETMT90

Thermal Receipt Printer

Epson thermal two color receipt printer, high speed up to 170mm per sec, auto paper cutter, 42/56 column, drop & load paper loading, parallel or serial interface.



\$799

Tape Drives

SONY IDE 20-52GB

Turbo Tape SDX260VR

- Large capacity, high speed backup for entry level business
- AIT-E Turbo Internal IDE
- Capacity: 20GB native, 52GB max
- Sustained Trans. rate: 6.0 MB/s Native
- 12MB Buffer memory



\$749

SONY SCSI 20-52GB

Turbo Tape SDX250VRB

- AIT-E Turbo Internal Scsi
- Capacity: 20GB native, 52GB max with 2.6 : 1 ALDC Compression
- Sustained Trans. rate: 6.0 MB/s Native
- Ultra Wide 68-pin High density connector
- 12MB Buffer memory



\$829

SONY IDE 40-104GB

Turbo Tape SDX460VRB

- Formats Supported: AIT-1 Turbo, AIT-E Turbo, AIT-1
- Media Supported: 8mm 230m (with or without MIC)
- Native Capacity: 40GB
- Native Storage Speed: 6MB/S



\$949

SONY IDE 80-208GB

Turbo Tape SDX560VRB

- Formats Supported: AIT-2 Turbo, AIT-E Turbo, AIT-2
- Media Supported: 8mm 230m (with or without MIC)
- Native Capacity: 80GB
- Native Storage Speed: 12MB/S



\$1499

Seagate 20GB Travan Internal Tape Drive STT220000A-SST

Travan 20 internal tape drive with ATAPI interface, has up to 10GB native capacity and 20GB compressed capacity.



\$299

Seagate 40GB Travan Tape STT3401A-SST

Travan 40 internal tape drive with ATAPI interface, has up to 20GB native capacity and 40GB compressed capacity. Sustained data transfer rate up to 120 MBytes/minute.



\$499

Seagate Quantum DDS4 Int. STD2401LW-SST

Certance DDS-4 40GB tape drive solutions leverage DDS-4 technology and Certance-exclusive features to provide the most reliable and affordable tape data protection to the small and medium businesses.



\$759

Seagate Quantum DDS4 Ext. STD6401LW-SST

Certance DDS-4 40GB tape drive solutions leverage DDS-4 technology and Certance-exclusive features to provide the most reliable and affordable tape data protection to the small and medium businesses.



\$899

Notting Hill (Head Office)
7 Howley Rd., Notting Hill
Tel: (03) 8542 8688
Fax: (03) 8542 8699

West Melbourne Branch
130 Dowling St., West Melbourne
Tel: (03) 9223 4288
Fax: (03) 9328 1899

LINKSYS®

A Division of Cisco Systems, Inc.



I Want Better Wireless!

Go farther and faster with the right adapter

Get maximum network performance when the gateway and adapters match! Start with the new Linksys Wireless-N ADSL2/2 + Gateway for optimal on-line gaming, streaming video, downloading music and making Internet phone calls. Then add the corresponding Wireless-N Notebook Adapter to get the full speed and range benefits of Wireless-N. Together they are the perfect solution to get better wireless throughout your home.



WPC300N Notebook Adapter



WAG325N Wireless-N ADSL2 + Gateway

- Maximize network performance
- Wireless-N is compatible with Wireless-B and -G devices
- Simple installation; fast setup

Linksys. Nobody makes networking easier!

Please visit www.linksys.com.au or call 1 800 678 808 for more product details.

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harveynorman

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POWERHOUSE

www.dse.com.au

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CISCO



EPS0839

USING THE WRONG INKS MAY ALSO DAMAGE YOUR PRINTER.



Using genuine EPSON inks will protect your print head and extend your printer's life. Independent research has proven that our inks improve photo quality, longevity and stability. So every memory can last for up to 92 years*. EPSON ink cartridges also give up to 30% more printouts per cartridge than third party ink cartridges. We could go on, but it wouldn't be fair to our competitors. Call 1300 361 054 or visit us at www.epson.com.au

*Torrey Pines Research results, *Wilhelm Imaging Research results; go to www.epson.com.au